

Catalogue of the papers and correspondence of

Malcolm Douglas Lilly FEng FRS

(1936-1998)

By Peter Harper and Timothy E. Powell

NCUACS catalogue no.150/7/06

Title: Catalogue of the papers and correspondence of Malcolm Douglas Lilly (1936-1998) FEng FRS, biochemical engineer

Compiled by: Peter Harper and Timothy E. Powell

Date of material: 1957-2003

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GENERAL INTRODUCTION

PROVENANCE

The papers were received from Mrs Sheila Lilly, widow, in June 2004 and September 2005.

OUTLINE OF THE CAREER OF MALCOLM DOUGLAS LILLY

Malcolm Douglas Lilly was born on 9 August 1936. He grew up in Eltham in South London and was educated at St Olave's and St Saviour's Grammar School and, after a period of national service in the Royal Navy, University College London where he read biochemistry and went on to research on microbial enzymes in the research group of the Patricia H. Clarke, working with Pauline Meadow (PhD 1962). Lilly then transferred to the Department of Chemical Engineering to work on immobilised enzymes with Eric Crook (NCUACS catalogue 147/4/06). In 1963 he was appointed Lecturer in Biochemical Engineering, joined a few years later by Peter Dunnill who became his closest collaborator.

One of the key areas of their research 'was the development of methods for using the high specificity of enzymes for complex reactions that were difficult to carry out by standard chemical methods. Because biological molecules, such as enzymes, are not as stable as industrial chemicals, basic research was needed to find out the best methods for maintaining their structure, and catalytic properties during purification and large-scale operations. It was also essential to develop appropriate equipment. ... [They] investigated equipment already used in industry. For example, they found that milk homogenisers used by the dairy industry could be used for disrupting micro-organisms. Later they improved the design of the fermenters in which the micro-organisms were grown. Malcolm's early work on the properties of enzymes immobilised by attachment to resin beads had particular importance. Immobilised enzymes have increased stability and can be used in commercial bioreactors for longer periods. One of the early successes at UCL was using an immobilised bacterial enzyme for the production of semi-synthetic penicillins. He researched biotransformation throughout his career, but also worked on other topics including mammalian cell culture, nucleotide isolation and biological fuel cells'. Obituary by Patricia H. Clarke, *Guardian*, 18 June 1998.

Lilly's career was closely connected to the development of biochemical engineering at UCL. In 1964 a Biochemical Engineering Section was established within the Department of Chemical Engineering and in 1966 the University of London approved the establishment of an MSc, with an undergraduate degree following in 1973. In 1979 Lilly was appointed the first Professor of Biochemical Engineering in the country. Further recognition for biochemical engineering at UCL came with its recognition as a national centre by the Science and Engineering Research Council (SERC) in 1987, the start of the

construction of an Advanced Centre for Biochemical Engineering in 1990 and in 1991 the establishment there of the UK Interdisciplinary Research Centre (IRC) in Biochemical Engineering supported by the SERC. Peter Dunnill was Director and Lilly, Chairman. The final step in a long struggle for the academic recognition was achieved in 1998 with the establishment of a separate Department of Biochemical Engineering as part of the School of Process Engineering.

Outside UCL Lilly was active in supporting biochemical engineering nationally and internationally. In 1981 when the Science and Engineering Research Council set up a Biotechnology Directorate under Dr Geoffrey Potter to encourage research in the field, Lilly (and others from UCL) served on the Biotechnology Management Committee. He was involved in several new international organisations including the International Organisation for Biotechnology and Bioengineering (Chairman 1972-1980) and the European Federation of Biotechnology. With colleagues from the Polytechnic of Central London (now University of Westminster) and the University of Kent he set up the Institute for Biotechnology Studies (later International Institute of Biotechnology), to promote multidisciplinary developments in biotechnology research and teaching. He was a member of the Board of Management and Executive Committee, 1983-1989. Other public responsibilities that he undertook included membership of the Research Board of British Gas, 1982-1994 and membership of the Board of the Public Health Laboratory Service, 1988-1994.

His outstanding achievement in biochemical engineering was widely recognised. In 1976 he was awarded the Food, Pharmaceutical and Bioengineering Award of the American Institute of Chemical Engineering, the first non-American to receive the award. He was elected to the Fellowship of Engineering (now Royal Academy of Engineering) in 1982 and of the Royal Society in 1991, the first biochemical engineer to receive both awards. He was a visiting Professor at the University of Pennsylvania in 1969 and a Visiting Research Fellow at Merck, USA in 1987.

In 1959 he married Sheila Stuart with whom he had two sons. At the height of his powers he was struck by cancer, which he fought courageously for more than ten years. With the support of his wife he was able to continue research until the last days of his life. He died on 18 May 1998.

For further information on the life and work of Lilly see 'Malcolm Douglas Lilly 9 August 1936 - 18 May 1998' by Patricia H. Clarke, *Biographical Memoirs of Fellows of the Royal Society*, vol.46, pp 317-332 (2000).

DESCRIPTION OF THE COLLECTION

The collection is presented as given in the list of contents. It is dominated by extensive documentation of the development of biochemical engineering at University College London and covers the period 1957-2003.

Section A, Biographical, is slight but includes a copy of the obituary that appeared in the *Guardian* newspaper, curriculum vitae, bibliography, list of theses supervised and an interesting record of his lengthy efforts to secure membership of the Institution of Chemical Engineers.

Section B, Notebooks and research notes, includes a sequence of notebooks covering an extended period, 1962-1998, in a variety of formats and used for a variety of purposes, including address book, lists of things to do, notes of meetings with UCL colleagues, European Federation of Biotechnology meetings, bibliographical references, etc. A notebook used from '11/10/1997' is identified as 'MDL's last notebook'. In addition there are research notes covering the period, 1965-1997. Some identifiable groups of notes have titles such as 'Control Systems', 'Fermentation' and 'Progesterone Conversion' but many notes were found loose and in no order and are undated.

Section C, University College London, is by far the largest component of the archive. It documents key aspects of the development of biochemical engineering there and covers the period, 1957-2002. It is subdivided into seven subsections: 'History', Advanced Centre for Biochemical Engineering (ACBE), Interdisciplinary Research Centre (IRC), Research grants, Teaching and training, Personnel and Miscellaneous. The 'History' subsection comprises the contents of folders and box folders labelled 'history' or 'historical' and includes strategic papers and records of developments in teaching, research and facilities. The ACBE subsection includes correspondence and papers relating to the creation of purpose-designed facilities for training and research activities in biochemical engineering at UCL in an 'Advanced Centre', 1986-1995. The IRC subsection documents developments associated with UCL becoming in 1991 the research council funded IRC for Biochemical Engineering with a ten year remit to develop an interdisciplinary programme of research and teaching. There is some overlap with material in 'ACBE' files. The Research grants subsection presents correspondence and papers about funding of research and related matters in biochemical engineering at UCL by Lilly and colleagues. The material is further organised by funding body or programme, by research contract client and by research topic and under the heading 'Patents'. The Teaching and training subsection presents Lilly's 'teaching notes' covering a variety of courses for UCL students and others and substantial documentation for biochemical engineering summer courses given at UCL for participants from industry and academe, many from overseas. The dating of the 'teaching notes' is often problematic. The summer courses are fully documented from no.3 to no.15, 1979-1991. The Personnel subsection relates principally to research students and visitors to the Department and

documents arrangements to visit, research, publications and later contacts with the Department. The contents of the Miscellaneous subsection is very diverse including equipment and facilities, research programmes, joint project with Biotechnology Computer Systems Ltd, collaboration with Tel Aviv University and correspondence with UCL Provost, Sir James Lighthill.

Section D, Publications, presents a near comprehensive record of Lilly's own scientific papers, 1962-2003, including a number of posthumous publications. The documentation may include manuscript and typescript drafts, correspondence and offprints. Also included here are the contents of a folder of 'unpublished' drafts. Publications correspondence is not extensive but there is some material relating to the journals with which Lilly was associated as author, reviewer and editor.

Section E, Lectures, provides documentation of Lilly's public and invitation lectures, 1966-1996. Topics include 'Immobilised Enzyme Reactors', 'Developments in Biocatalysis', 'Two-liquid phase biocatalytic reactors', 'Industrial Use of Biocatalysts for Asymmetric Synthesis' and 'Biochemical Engineering - Its Contribution to Society', Lilly's 1988 Sir Harold Hartley Memorial Lecture. There are also many untitled lecture notes and drafts and some illustrative material for lectures and papers.

Section F, Societies and organisations, documents Lilly's association with twenty-four British and international organisations, 1968-1998. Amongst the best documented are the European Commission, whose programmes supported biochemical engineering developments at the European level, and the European Federation of Biotechnology (EFB) and the International Organisation for Biotechnology and Bioengineering (IOBB), both of which Lilly served in a number of capacities including for the IOBB a period as chairman. Lilly's papers include a 'Formation of the EFB' file. The most comprehensively documented body is the Institute for Biotechnology Studies / International Institute of Biotechnology, including correspondence and papers relating to the formation of the Institute, trustees and management committee meetings, research programme, policy review, etc.

Section G, Consultancies, documents consultancy relationships with twenty-one commercial organisations, 1968-1997, including Beckman Instruments Inc, Beecham Group Ltd / Smith Kline Beecham and Merck Sharp & Dohme Research Laboratories. On occasions Lilly consulted in partnership with his UCL colleague Peter Dunnill as Biotech Consultants.

Section H, Visits and conferences, covers the period 1964-1998. At the end of the chronological sequence are papers relating to a number of meetings that Lilly was unable to attend because of ill health. The documentation may include programmes, lists of participants, abstracts and Lilly's notes on proceedings.

Section J, Correspondence, is slight. There is a sequence of correspondence presented chronologically, 1966-1998, made up of letters found loose and without context. There are also references and recommendations, 1968-1998.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

We are very grateful to Mrs Sheila Lilly for making the papers available for cataloguing and to Mrs Lilly and Professor John Woodley for information and advice.

LOCATION OF OTHER MATERIAL

Correspondence and papers relating to the preparation of the Royal Society biographical memoir of Lilly form part of the archive of Professor Patricia Clarke catalogued for University College London Library Special Collections (NCUACS catalogue no. 120/6/03).

SECTION A	BIOGRAPHICAL, A.1-A.15	1962-2000
A.1	Announcement of death from UCL website Obituary, <i>Guardian</i> , 18 June 1998	1998
A.2	Curriculum vitae Bibliography of 236 publications 1962-2000 List of theses supervised by Lilly 1966-1994	October 1990 2000
A.3	'Excited by enzymes' Short account by Lilly of his research in SERC bulletin, Spring 1994	1994
A.4	'Accumulation of Nucleotides and Extracellular Lipoproteins by Lysine Dependent Mutants of <i>Escherichia Coli</i> ' Title page only of Lilly's PhD thesis, April 1962	1962
A.5	Nomination papers for Lilly's candidature for <i>New Scientist</i> Award for outstanding achievement in the field of technology	1968
A.6	Food, Pharmaceutical and Bioengineering Award, American Institute of Chemical Engineers Manuscript notes for Lilly's acceptance speech.	1976
A.7-A.9	Institution of Chemical Engineers membership, 1979 Correspondence and papers <i>re</i> efforts of Lilly to secure membership of the Institution. His definitive election as a Member of the Institution was only confirmed in 1979, the year of his election to a personal chair at UCL. He was transferred to the class of	1964-1980

Biographical, A.1-A.15

- Fellow in 1980.
- A.7 1964-1977
- A.8 1978-1980
- A.9 N.d.
Includes 'Biochemical Engineering Aspects of Enzyme Technology. A synopsis of research by M.D. Lilly submitted to the Institution of Chemical Engineers'.
- A.10 Election to Fellowship of the Royal Society 1991
Typescript draft of remarks by Lilly at a gathering of friends and colleagues to mark his election.
- A.11 Typescript notes etc for Wellcome Trust Witness Seminar on 'Post-penicillin Antibiotics: From Acceptance to Resistance', 12 May 1998 1998
Lilly was unable to attend and died on 18 May 1998.
- A.12 Portrait photograph of Lilly 1991
- A.13-A.15 'Knowledge Acquisition and Implementation of a Prototype for an Expert System to Design Biochemical Reactors' 1986
M.Sc Project by J.T. Sinclair. Lilly was interviewed as part of the project and is the 'expert' referred to in the text.
Two folders and bound volume.
At A.13 is a letter of thanks from Sinclair to Lilly.

SECTION B NOTEBOOKS AND RESEARCH NOTES, B.1-B.46 1962-1998

B.1-B.34 NOTEBOOKS

B.35-B.46 RESEARCH NOTES

B.1-B.34 NOTEBOOKS 1962-1998, n.d.

These notebooks are in a great variety of formats and serve a number of purposes.

The catalogue entries incorporate identifications by Mrs Sheila Lilly.

B.1 Hardback notebook used for 'Senior / Chief Technician's notes by Paddy Legge' 1962-1963

Notes are dated, 31 December 1962 - 6 December 1963.

An undated note from 'Paddy' to 'Dr Lilly' is enclosed at the front of the notebook.

B.2 'Research Notes Penicillin amidase' 1964-1966

Hardback notebook so labelled on front cover used for experimental record, '19th May' [1964] - '29/10/66'. Some undated notes towards the end of the notebook. The project is outlined in a note inside front cover.

B.3 Notebook used for 'MDL's first list of papers ... / a word game / ref. for Bill Hornby/ ... ' and 'Russian when we went to classes in Gravesend 1963 onwards' N.d.

Latest bibliographical reference 1965.

B.4 Small format softback notebook used for research notes, notes headed 'Flowering Shrubs', etc. N.d.

'Flowering shrubs were being bought for our first home at Northfleet / Gravesend [Kent] in 1964'.

Notebooks and research notes, B.1-B.46

- | | | |
|-----------|---|-----------|
| B.5 | <p>Small format notebook, very mixed in content, used for notes and chapter headings of book with ?Peter Dunnill, research notes including, from the back, work with P.H. Clarke, etc.</p> <p>Latest bibliographical reference 1966.</p> | N.d. |
| B.6 | <p>Small format hardback notebook used for lists of things to do</p> <p>Entries run from 2 June 1970.</p> | 1970-1971 |
| B.7 | <p>Small format hardback notebook used from the front for list of publications and from the back for lists of things to do, also notes of Society of Chemical Industry meeting, etc.</p> | 1972-1973 |
| B.8 | <p>Small format hardback notebook used for notes of meetings, etc.</p> <p>Mrs Lilly identified the meeting at Rouen with which the notebook begins as dating from 1972. See E.4.</p> | N.d. |
| B.9 | <p>Small format notebook used for lists of things to do and at the back for list of publications.</p> <p>Entries run from '2.1.74'.</p> | 1974-1975 |
| B.10-B.14 | <p>Five same format softback exercise books used for notes re work of research students</p> <p>Notebooks have labels on front covers identifying the research students though in the case of B.14 the name has been crossed out.</p> <p>The label for B.10 also identifies the topic 'Cholesterol Oxidase'.</p> | 1977-1979 |
| B.15 | <p>Hardback notebook used by Lilly for record of ? incoming correspondence and action taken</p> <p>Used for first half of the year only.</p> | 1980 |

Notebooks and research notes, B.1-B.46

- | | | |
|------|---|--------------|
| B.16 | Small format hardback notebook used for list of publications at front and miscellaneous notes at back

Probably in use early 1980s. Reference to Banff [Alberta, Canada] may be to 1981 meeting there. See H.23-H.25. | ?early 1980s |
| B.17 | Small format hardback notebook used for record of meetings relating to ?The Institute for Biotechnology Studies

See also F.166-F.271. | 1982-1983 |
| B.18 | Small format hardback notebook used for lists of things to do, etc. | 1983-1985 |
| B.19 | Notebook (covers missing) used for notes on meetings, etc.

Includes Society of Chemical Industry meeting, 19 June 1986. | 1985-1986 |
| B.20 | Large format notebook used by Lilly's research student R.C. Eglin | 1985-1987 |
| B.21 | Hardback notebook used for notes on European Federation of Biotechnology (EFB) meetings, etc.

Probably in use late 1980s. | ?late 1980s |
| B.22 | Small format hardback notebook used for lists of things to do, etc. | [1989]-1990 |
| B.23 | Hardback notebook used for notes of meetings with UCL colleagues <i>re</i> research, etc. | 1989-1991 |
| B.24 | Hardback notebook used for notes for meetings with UCL colleagues <i>re</i> research, building, equipment, IRC, Link, etc. | 1990-1992 |

/...

Notebooks and research notes, B.1-B.46

I...	For IRC see C.152-C.194. For Link programme see B.26, B.27, C.236-C.304, C.930-C.941.	
B.25	Small hardback notebook used for lists of things to do, etc.	1991-1992
B.26	Small format hardback notebook used for bibliographical references from the front and from the back for notes <i>re</i> Link programme.	c.1993 - 1994
B.27	A4 size hardback notebook used for notes on meetings with UCL colleagues: training meeting, fermentation research, transketolase, IRC strategy, Link etc.	1993-1997
B.28	A4 size softback notebook: includes notes on 'Meeting on Labview 17/6/94'	1994
B.29	Soft backed '9" x 7" Exercise Book' used for bibliographical references	? 1995
B.30	Small format hardback notebook identified as 'MDL's last notebook from 11/10/1997'	1997-1998
B.31	Binder used for bibliographical references	N.d.
B.32	Softback notebook used for bibliographical references	N.d.
B.33	Hardback notebook used for bibliographical references	N.d.
B.34	Address book with manuscript note 'This seems to cover almost the whole of MDL's research period at UCL' Loose items enclosed.	N.d.

Notebooks and research notes, B.1-B.46

B.35-B.46	RESEARCH NOTES	1965-1997
B.35-B.36	'VI. Control Systems' Contents of folder so inscribed divided into two for ease of reference: manuscript draft and printed background material, latest publication date 1964.	N.d.
B.37	'Active Projects', 'Projects completed' and 'Projects (incomplete but not active)' Papers so titled found clipped together. The papers seem to form a record of the research situation in December 1970.	1970
B.38	'4 Phase Fermentations' Contents of folder so inscribed: manuscript and typescript notes, background printed papers. Latest bibliographical reference in the notes, 1972.	N.d.
B.39-B.40	'Fermentation' Contents of folder so inscribed divided into two for ease of reference: manuscript list of bibliographical references, offprints, etc. At B.40 are 'Tables and figures Topic No.1 Growth and Metabolism Fermentation Technology' by C.L. Cooney, Massachusetts Institute of Technology, 30 July - 3 August 1973.	1973, n.d.
B.41	'Progesterone Conversion' Contents of folder so inscribed: manuscript and typescript notes, correspondence, etc. It is possible that the contents are more diverse than the folder title suggests.	1968-1978
B.42	'1000 Litre Data' Contents of folder so inscribed: manuscript data and plots.	N.d.

Notebooks and research notes, B.1-B.46

B.43-B.46	Shorter notes and drafts found loose and in no order. Many papers undated. Four folders.	1965-1997
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SECTION C

UNIVERSITY COLLEGE LONDON, C.1-C.971

1957-2002

This section documents significant aspects of the development of Biochemical Engineering at UCL.

Important dates include:

1954 Joint research undertaken between the Departments of Biochemistry and Chemical Engineering.

1958 Guinness lecturer (Dr F. Webb) appointed.

1964 Biochemical Engineering Section established.

1976 Departmental name changed to 'Chemical and Biochemical Engineering'.

1987 Recognised as a national centre by Science and Engineering Research Council (SERC).

1990 Construction of Advanced Centre started.

1991 Interdisciplinary Research Centre (IRC) supported by SERC.

1998 Formation of two Departments - the Department of Biochemical Engineering and Department of Chemical Engineering - as part of the School of Process Engineering.

Teaching courses developed as follows:

1959 Postgraduate Diploma Course (1 year).

1966 MSc approved by University.

1973 BEng (3 year) started.

1977 Annual one-week post-experience course started.

The material is arranged as follows:

C.1-C.40	'HISTORY'
C.41-C.151	ADVANCED CENTRE FOR BIOCHEMICAL ENGINEERING (ACBE)
C.152-C.194	INTERDISCIPLINARY RESEARCH CENTRE (IRC)
C.195-C.472	RESEARCH GRANTS

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C.473-C.757 TEACHING AND TRAINING

C.758-C.891 PERSONNEL

C.892-C.971 MISCELLANEOUS

C.1-C.40 'HISTORY' 1957-1998

Contents of folders and box folders labelled 'history' or 'historical'.

C.1-C.6 'UCL Historical' 1957-1989

Contents of folder so inscribed.

C.1 'The future prospects of Biochemical Engineering in University College' [?1963]

8pp typescript and manuscript draft with manuscript additions and corrections.

C.2 Papers found clipped to the preceding: 1957-1966

'Biochemical Engineering Equipment', 3pp typescript + 1p typescript headed 'Dr Crook's original draft'. N.d.

'Project Reports for Period 1st Sept. 1965 - 31st Aug. 1966', 4pp typescript.

'Biochemical Engineering Education and Research' by M.C. Reece, The Industrial Chemist, July 1957. Off-print with manuscript underscoring.

University College London Chemical Engineering Department Syllabus of the 1 year Postgraduate Course in Biochemical Engineering, 1p duplicated typescript, n.d.

C.3 Correspondence and papers 1970-1972

Includes 'Supplementary Report to the Enzyme and

University College London, C.1-C.971

Technology Committee' by Lilly and P.Dunnill.

- | | | |
|----------|--|-----------|
| C.3 | Correspondence and papers
Principally <i>re</i> research and funding. | 1983-1989 |
| C.4 | Lists of [Lilly's] research grants, committee and panel membership and consultancies
The lists were prepared after 1989. | N.d |
| C.5 | Manuscript and typescript drafts <i>re</i> biochemical engineering at UCL
Includes 'Future Developments in Biochemical Engineering at UCL A Discussion Paper', 12pp manuscript draft + 'Appendix II Biochemical Engineering Personnel'. | N.d. |
| C.6 | Architect's drawings for UCL Engineering Faculty
See also C.38. | N.d. |
| C.7 | 'Biochemical Engineering Accommodation and Equipment'
1p typescript 25 November 1963. | 1963 |
| C.7 | 'Memorandum on the present state and future of biochemical engineering at University College London'
2pp duplicated typescript memorandum by 'EB' [?Eric Baldwin], 3 December 1963, enclosing eight documents by M.B. Donald, E.M. Crook, Lilly and others. | 1963 |
| C.8, C.9 | Correspondence and papers
Two folders.
Includes 'The Supply of Enzymes for Industrial and Medical Use A Report submitted to the Science Research Council' by Lilly, February 1967. | 1967 |

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|-----------|--|--------------|
| C.10 | 'Insolubilised Amyloglucosidase at U.C.L.' | 1968 |
| | 4pp typescript '8.10.68' + results and graphs. | |
| C.11 | 'Department of Chemical Engineering, University College London Biochemical Engineering Section' | N.d. |
| | 5pp typescript + publications list. Latest bibliographical reference, 1968. | |
| C.12 | Correspondence <i>re</i> projects and funding | October 1969 |
| C.13 | Correspondence and papers <i>re</i> Enzyme Technology Research Group | 1970-1973 |
| C.14-C.18 | 'Historical <i>re</i> teaching' | c. 1972-1995 |
| | Contents of folder so inscribed divided into five for ease of reference: lecture lists, course summaries, timetables etc. | |
| | Many undated papers. | |
| C.19 | Correspondence and papers <i>re</i> visits of students to Thames Water Authority Crossness Sewage Treatment Works | 1973-1977 |
| C.20 | Correspondence on biotechnology between Lilly and J.M. Ashworth, Chief Scientist, Cabinet Office Central Policy Review Staff | 1977 |
| C.21 | 'Enzymes and industrial catalysis - a discussion', <i>Chemistry and Industry</i> , 1 April 1978 | 1978 |
| | Those taking part in the discussion included Lilly, Peter Dunnill, also of UCL, and Eric Crook of St Bartholomew's Hospital Medical School, formerly of UCL. | |
| C.22 | Correspondence and papers <i>re</i> developments in biochemical engineering and biotechnology at UCL and | 1980-1982 |

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nationally.

Includes copy of letter to the Prime Minister, 7 January 1981, about biotechnology in the UK (Lilly was a co-signatory) and letter from Lilly to the Provost UCL, 8 March 1982, about 'plans for the creation of a College Centre for Biochemical Engineering and Technology'.

- | | | |
|-----------|--|---------------|
| C.23 | 'Dev of SERC Centre' | 1983-1986 |
| | Contents of folder so inscribed: correspondence and papers <i>re</i> development of UCL as a centre for Biochemical Engineering and related matters. | |
| | See also C.952-C.954 | |
| C.24 | Correspondence and papers <i>re</i> University Grants Committee additional equipment grant for 1985/86 | 1985 |
| | The Government made available the additional equipment grant 'for the improvement of laboratory and equipment provision in a few carefully selected centres of research'. The selection committee under Sir Andrew Huxley put forward a list of research groups including that of Lilly and Peter Dunnill. | |
| C.25 | UCL Biochemical Engineering Newsletters nos 2 and 3 | 1985-1986 |
| C.26 | Application to Wolfson Foundation in respect of the creation of an Advanced Centre for Biochemical Engineering (ACBE) at UCL | 1986 |
| C.27-C.29 | 'History / ACBE [Advanced Centre for Biochemical Engineering]' | 1989 and n.d. |
| | Contents of folder so inscribed divided into three for ease of reference: photographs of equipment and architect's models, and architect's drawings. | |
| | The drawings are dated August - October 1989. | |
| C.30 | 'Biochemical Engineering at UCL' | 1992 |

University College London, C.1-C.971

1p handout listing some important dates, teaching courses, academic staff and research areas.

- | | | |
|------|---|-----------|
| C.31 | <p>Conference des Grandes Ecoles Visit to the Advanced Centre for Biochemical Engineering UCL, 17 February 1993</p> <p>Contents of folder inscribed 'history': correspondence and papers <i>re</i> visit.</p> | 1993 |
| C.32 | <p>Opening of the Advanced Centre for Biochemical Engineering, 8 September 1993</p> <p>Account of the opening in 'bioBulletin' the newsletter of the biotechnology directorate SERC, November 1993.</p> | 1993 |
| C.33 | <p>'Undergraduate Biochemical Engineering - a position paper'</p> <p>Copy of position paper ?by Nigel Titchenor-Hooker, with Lilly's manuscript comments on undergraduate biochemical engineering, 25 November 1995.</p> | 1995 |
| C.34 | <p>UCL Department of Chemical and Biochemical Engineering Strategic Plan 1997-2000</p> | 1997 |
| C.35 | <p>Correspondence and papers <i>re</i> formation of a separate UCL Department of Biochemical Engineering</p> | 1997-1998 |
| C.36 | <p>'The future of biochemical engineering at UCL'</p> <p>3pp typescript. Incomplete.</p> | N.d. |
| C.37 | <p>'Chemical & Biochemical Engineering Summary of Essential Points made by Department in support of its claim for an Increased Recurrent Grant'</p> <p>3pp typescript + 'Comparison of Departmental Resources ... with Other Departments represented on the Working Party'.</p> | N.d. |

University College London, C.1-C.971

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|------------|--|---------------|
| C.38 | Architect's drawing

See also C.6. | N.d. |
| C.39, C.40 | Printed papers <i>re</i> biochemical engineering at UCL and more generally.

Two folders. | 1984 and n.d. |
| C.41-C.151 | ADVANCED CENTRE FOR BIOCHEMICAL ENGINEERING (ACBE)

Contents of ring binders, box folders, etc entitled 'Advanced Centre for Biochemical Engineering' or 'ACBE': correspondence and papers, principally relating to the creation of purpose-designed facilities for training and research activities in biochemical engineering at UCL in an 'Advanced Centre', 1986-1995 and research council assessment, 1996-1997.

Include drawings and plans, minutes of meetings and much photocopied material, notes, drafts, etc sent to Lilly by UCL biochemical engineering colleagues.

Correspondents include Provosts UCL, biochemical engineering colleagues, architects, funders, etc.

The contents of a number of boxes and folders were found in considerable disorder and included much undated material, the assignment of which is tentative.

See also C.26, C.27-C.29, C.32. | 1983-1997 |
| C.41 | 'Advanced Centre for Biochemical Engineering A Preliminary Architectural, Engineering & Costing Study'

In original binder.

The study was prepared by Matthew Hall Norcain Engineering Limited. | April 1986 |
| C.42-C.50 | 'A.C.B.E A-L'

Contents of ring binder so inscribed divided by titled | 1986-1989 |

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subject dividers.

A subject divider inscribed 'Chemap' did not correspond to any surviving papers.

Correspondence with industrial and commercial concerns relates to fund raising and research cooperation.

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| C.42 | Miscellaneous papers at front of binder including list of 'Contacts [in respect of fund raising] made up to mid-June 1987' | 1986-1987 |
| C.43 | 'ACBE Appeal' | 1986-1987 |
| C.44 | 'Alfa-Laval'

Alfa-Laval Engineering Ltd was an equipment manufacturer in respect of fermentation and bioprocessing technology. | 1986-1989 |
| C.45 | 'Archaeology Appeal'

Lilly was a member of the Executive Appeal Committee for the Archaeological Conservation Centre. | 1986-1987 |
| C.46 | 'Architects' Sub-Committee (architect, general)

Lilly was a member of the Sub-Committee. | 1986-1988 |
| C.47 | 'Bayer'

One letter only. | 1988 |
| | 'Beechams' | 1986-1988 |
| C.48 | 'British Gas' | 1988-1990 |

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C.49	'Davy McKee'	1988
	'General correspondence, etc.'	1986
	One letter only.	
	Carbon of letter from Lilly to R. Coleman of the Biotechnology Unit of the Laboratory of the Government Chemist.	
	'Gist-Brocades'	1987-1988
	'Glaxo'	1987
C.50	'Wensley Haydon-Baillie'	1988
	'ICI'	1986, 1988
	Leverhulme Trust	N.d.
	One letter only.	
C.51-C.63	'ACBE M-Z'	1984-1989
	Contents of ring binder so inscribed divided by titled subject dividers.	
	A subject divider inscribed 'Tel-Aviv University' did not correspond to any surviving papers.	
	Correspondence with industrial and commercial concerns relates to fund raising and research cooperation.	
C.51	Copies of correspondence between Provost UCL and Wolfson Foundation found loose at front of binder	1989
C.52	Marks & Spencer	1987
C.53	Matthew Hall / Stearns Catalytic'	1986
	Includes cost estimates for the ACBE.	

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C.54	'Merck'	1988
	'Porton International'	1987
	One letter only.	
C.55	'Project Sub-Committee'	1986-1987
	Lilly was a member of the Project Sub-Committee - Proposed Development of the Gordon Street Site.	
C.56	'Sainsbury'	1989
C.57	'Sasakawa Foundation'	1986
C.58	'Smith, Kline & French'	1987
C.59	Thomas Harris & Associates	1988
	<i>Re</i> drawing up feasibility strategy for financing the development.	
C.60	'Unilever'	1984-1988
C.61, C.62	'UGC [University Grants Committee]'	1986-1988
	Two folders.	
C.63	'Wellcome'	1986, 1988
	'Wolfson'	1986

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|-----------|---|------------|
| C.63A | 'The Creation of an Advanced Centre for Biochemical Engineering' | 1987 |
| | 11pp typescript + appendices. | |
| | Bound volume | |
| C.64 | 'Conceptual Study for the Advanced Centre for Biochemical Engineering' | April 1988 |
| | Prepared by Davy McKee 'A Davy Corporation Company'. | |
| | In original binder. | |
| C.65-C.66 | Contents of untitled ring binder divided into two for ease of reference | 1989-1990 |
| | Includes manuscript notes and drawings by Lilly. | |
| C.67 | 'Report of Design Requirements', February | 1990 |
| | In original binder. | |
| | Prepared by Davy McKee. | |
| | See also C.68. | |
| C.68 | 'Comments on DMK Document (Revision 1) MDLilly 25/2/90' | 1990 |
| | 2pp manuscript notes found at the front of the Report at C.67. | |
| C.69-C.73 | Contents of untitled binder divided into five for ease of reference | 1990 |
| | Letter from Davy McKee, 20 March 1990, enclosing a set of documents, principally drawings 'at preliminary status only'. | |
| C.74 | 'Technical Package' | 1990 |
| | Contents of binder so inscribed: 'client technical brief' | |

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prepared by Davy McKee, August 1990. Retained in original binder.

See also C.75.

C.75	Papers found loose at the front of 'Technical Package' binder	1990
C.76-C.143	General correspondence and papers	1985-1997
C.76		1985
C.77		1986
C78-C.79		1987
	Two folders.	
C.80-C.83		1988
	Four folders	
	Undated papers tentatively assigned to 1988 are at C.83.	
C.84-C.94A		1989
	Twelve folders.	
C.95-C.102		1990
	Eight folders.	
C.103-C.113		1991
	Eleven folders	

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C.114-C.116	1992	
	Three folders.	
C.117-C.122	1993	
	Six folders.	
	C.117 includes papers for visit of G. Robinson, Chief Advisor on Science and Technology, Department of Trade and Industry to UCL, 14 January 1993.	
C.123	1994	
C.124	1995	
C.125	1996	
C.126-C.141	1997	
	Sixteen folders.	
C.142, C.143	N.d.	
	Two folders.	
	At C.143 are transparencies for presentation on biochemical engineering at UCL and the ACBE.	
C.144-C.151	Engineers' drawings	1983-1990
	Eight folders.	

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C.152-C.194 INTERDISCIPLINARY RESEARCH CENTRE (IRC) 1989-1997

Contents of box folders, folders, etc inscribed 'IRC':
correspondence and papers *re* establishment, programme
and assesment of the IRC.

There is some overlap with materials found in 'ACBE'
folders.

The assignment of undated papers is tentative.

In 1991 UCL became the IRC for Biochemical Engineering
(Director Peter Dunnill) with a ten year remit to develop an
interdisciplinary programme of research and teaching. In
1995, following a review of the IRC the Biotechnology and
Biological Sciences Research Council decided that it
should be 'converted to a 4-year funding cycle, with the
budget being set using the Council's funding formula for
institutes'. The Centre was assessed in 1996 and received
a Visiting Group in 1997.

C.152 1989

C.153-C.157 1990

Five folders.

C.158-C.165 1991

Eight folders.

C.166-C.175 1992

Includes much undated material found in great disorder.

Ten folders.

C.176 1993

C.177-C.181 1994

Five folders.

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C.182, C.183	1995	
	Two folders.	
C.184	1996	
C.185-C.189	1997	
	Five folders.	
C.190-C.194	N.d.	
	Five folders.	
C.195-C.472	RESEARCH GRANTS	1962-1998
	Contents of Lilly's boxes labelled 'Research Grants': correspondence and papers <i>re</i> funding of research, etc in biochemical engineering at UCL by Lilly and colleagues.	
	The material is presented as follows:	
	C.195-C.387	By funding body or programme
	C.388-C.401	By research contract client
	C.402-C.459	By research topic
	C.460-C.472	Patents
C.195-C.387	By funding body and programme	1962-1998
	Alphabetical sequence	
C.195-C.201	Biotechnology and Biological Sciences Research Council	1992-1997

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| C.195-C.197 | 'Project with Warwick' | 1994-1995 |
| | Contents of folder so inscribed divided into three for ease of reference: correspondence and papers <i>re</i> grant proposal entitled 'Large-scale Biotransformation for the Recycling of Industrial By-Products of Speciality Chemical Manufacture'. This grant proposal was made under the 'Cleaner Synthesis for Industry' initiative and submitted by D.H.G. Crout and P.Critchley of the University of Warwick and Lilly and J.M. Woodley of UCL. | |
| C.198 | 'Clean Technology' | 1992, 1994 |
| | Contents of folder so inscribed: correspondence and papers <i>re</i> Research Councils' interest in promotion of research towards new clean technologies. | |
| | ? relates to 'Project with Warwick' (C.195-C.197). | |
| C.199 | 'BBSRC' | 1996 |
| | Contents of folder so inscribed: correspondence <i>re</i> research studentships. | |
| C.200 | 'TK [transketolase] application' | 1996 |
| | Contents of folder so inscribed: papers <i>re</i> application by J.M. Ward, J.M. Woodley and Lilly titled 'Recombinant transketolase with broad industrial potential'. | |
| C.201 | '1998 PhD Proposal' | 1997 |
| | Drafts for application. | |
| C.202-C.207 | Department of Trade and Industry | 1983-1985 |
| | Contents of folder inscribed 'DTI' divided into six for ease of reference: principally research reports. | |
| | See also Link Programme. | |

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| C.208, C.209 | Engineering and Physical Sciences Research Council (EPSRC) | 1995-1996 |
| | <p>Contents of folder inscribed 'Polyleucines Exeter [crossed out] (Roberts)' divided into two for ease of reference: application and related papers.</p> <p>The project was titled 'Scale up of asymmetric epoxidation reactions using polyleucine based catalysts' and the investigators were S.M. Roberts (Liverpool), Lilly and J.M. Woodley.</p> | |
| C.210-C.235 | European Commission (EC) | 1979-1998 |
| C.210-C.217 | 'Biochemical engineering programme' | 1979-1985 |
| | <p>Contents of folder so inscribed divided into eight for ease of reference: correspondence and papers <i>re</i> proposal for a European Community programme for research and development in biochemical engineering and specific UCL research proposal within the framework of the programme on 'the development of multiphase bio-reactors for the modification of oils and fats.</p> | |
| C.218 | 'FP4 Proposal' | 1994-1995 |
| | <p>Contents of folder so inscribed: correspondence and papers <i>re</i> proposed joint EC project with DSM Research in the Netherlands on two phase liquid biocatalysis.</p> | |
| C.219-C.234 | 'Research Grant (Last one he worked on) FP4 - Proposal BVMO [Baeyer-Villiger Mono-oxegenases]' | 1996-1997 |
| | <p>Contents of folder with post-it note so inscribed divided into sixteen for ease of reference: correspondence and papers <i>re</i> proposal titled 'Biotransformations using Baeyer-Villiger Mono-oxegenases'.</p> <p>Project partners came from the UK and France, Germany, Italy, the Netherlands and Switzerland.</p> <p>These papers were found in considerable disorder and have been presented in the order found.</p> <p>See also C.235.</p> | |

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- C.235 'EC Grant Proposal' 1998
- Contents of folder so inscribed: correspondence, manuscript notes *re* Baeyer-Villiger Mono-oxegenases proposal.
- See also C.219-C.234.
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- C.236-C.304 **Link Programme** 1988-1997
- This programme was jointly funded by the Department of Trade and Industry and the Science and Engineering Research Council with the view to encouraging collaborative university-industrial research projects.
- The papers relate to a proposal (accepted) for a UCL/Industry biochemical engineering consortium involving four companies - SmithKline Beecham Pharmaceuticals, ICI Biological Products (Zeneca BioProducts), Shell Research and Unilever Research. The objective was to support biochemical engineering research and training at UCL, initially for four years, by providing funds for pre-competitive research, provision of research facilities and assistance with training. The start date was 1 September 1990 with a completion date of 30 August 1994.
- Much of the material was found in labelled folders which have been used as the basis of arrangement. However, there was also a large number of loose papers which have been presented in a chronological sequence as far as possible.
- See also C.930-C.941, F.362-F.367.
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- C.236-C.243 'LINK - Setting Up - 1988/1989' 1988-1990
- Contents of folder so labelled divided into eight for ease of reference: correspondence and papers.
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- C.244-C.250 'LINK - Setting up - 1990' 1990
- Contents of folder so labelled divided into seven for ease of reference: correspondence and papers.

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| C.251-C.257 | 'LINK Agreement / Offer Letter / RG2 / E14 / Original Proposals etc' | 1989-1994 |
| | Contents of folder so labelled divided into seven for ease of reference: correspondence and papers. | |
| | See C.256, C.257 for overheads for presentation including transparencies. At C.257 is programme for 'Final LINK Programme Presentations to Unilever (Colworth) July 27 1994'. | |
| C.258-C.262 | 'LINK DTI Proposal / Offer Letter' | 1989-1993 |
| | Contents of folder so inscribed divided into five for ease of reference: correspondence and papers. | |
| C.263 | 'LINK Costings' | 1989-1990 |
| | Contents of folder so labelled: manuscript notes, summary of programme costs, etc. | |
| C.264 | 'Institute Department of Trade and Industry Companies Shell' | 1990-1994 |
| | Contents of folder so labelled: correspondence and papers. | |
| C.265 | 'LINK Management Committee Meetings' | 1990-1991 |
| | Contents of folder so inscribed: correspondence, agendas etc. | |
| C.266 | 'LINK Management Committee Minutes' | 1990-1994 |
| | Contents of folder so labelled. | |
| C.267-C.270 | 'LINK' | 1991 |
| | Contents of folder so labelled divided into four for ease of reference: correspondence and papers. | |

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C.271, C.272	'UCL LINK'	1994
	Contents of folder so labelled divided into two for ease of reference: papers probably for LINK presentation to SB [SmithKline Beecham] Worthing, Sussex, 31 July 1994.	
C.273	'(Overhead) Transparencies - IRC'	N.d.
	Contents of folder so inscribed: includes Lilly's manuscript notes and drafts.	
	Found with LINK papers.	
C.274-C.304	General correspondence and papers	1988-1997
C.274	1988-1989	
C.275	1990	
C.276-C.281	1991	
	Includes project reports.	
	Six folders.	
C.282-C.292	1992	
	Includes project reports.	
	Eleven folders.	
C.293, C.294	1993	
	Includes transparencies for scientific presentations at Biochemical Engineering LINK meeting.	
	Two folders.	
C.295-C.299	1994	

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/...	Includes papers for 'Progress Report 8 of the Biochemical Engineering Consortium'. Five folders.	
C.300	1995	
C.301	1997	
C.302-C.304	N.d. Three folders.	
C.305-C.320	National Research Development Corporation See also C.392-C.395.	1968-1978
C.305, C.306	'NRDC General' Contents of folder so inscribed divided into two for ease of reference: correspondence and papers <i>re</i> support for work at UCL by the NRDC and patent applications.	1968-1975
C.307-C.317	'NRDC Patents' Contents of folder so inscribed divided into eleven for ease of reference: correspondence and papers <i>re</i> patent applications etc. .	1968-1978
C.318	'Porous reactors' Contents of folder so inscribed: correspondence and papers <i>re</i> patent application arising from work on porous reactors.	1969-1971
C.319	'NRDC Grant - EB-J2' Contents of folder so inscribed: correspondence and	1969-1971

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papers *re* NRDC funded project on polymer bound enzymes including report to NRDC on final year of project.

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| C.320 | 'N.R.D.C. Patents' | 1969-1971 |
| | Contents of folder so inscribed: correspondence and papers <i>re</i> patent applications. | |
| C.321-C.375 | Science Research Council / Science and Engineering Research Council | 1962-1994 |
| | Documentation of Lilly's SRC / SERC grants are presented in an approximately chronological order. | |
| | Included in the sequence are joint applications with colleagues at UCL or other institutions and applications by UCL colleagues sent to Lilly for information. | |
| | 'EB' reference numbers in the catalogue entries relate to UCL's own grant referencing system | |
| C.321-C.323 | SRC grant B/SR/833 'Biochemical Fuel Cells' | 1962-1970 |
| | Contents of folder inscribed 'Fuel Cells' divided into three for ease of reference: correspondence and papers. | |
| | The initial application was made to the SRC's predecessor organisation the Department of Scientific and Industrial Research (DSIR) by M.B. Donald. On Donald's resignation from UCL in 1966 the details of the grant were amended to provide for the research to be conducted by Lilly and P.N. Rowe. | |
| C.324-C.326 | SRC grant GR/A/87081 'Effect of cycling dissolved gas concentrations on microbial product formation' | 1978-1982 |
| | Contents of folder inscribed 'SERC grant Effect of Cycling EBC7' divided into three for ease of reference: correspondence and papers including application and reports. | |
| C.327 | SRC grant application 'The Stability of Biological Catalysis in Reactor Systems' | 1981 |

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Application only.

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| C.328 | SRC grant application 'A Biochemical Engineering Study to Improve Protein Processing' | 1981 |
| | Application only. The applicant was Lilly's UCL colleague Peter Dunnill. | |
| C.329-C.332 | Miscellaneous correspondence and papers <i>re</i> SRC grants | 1969-1981 |
| | Contents of folder inscribed 'SRC Research Grant Claim' divided into four for ease of reference: includes grant applications. | |
| C.333 | SERC grant GR/B 54520 'Pilot-Scale Fermentation' | 1980-1982 |
| | Contents of folder so inscribed 'SERC Grant "Pilot-Scale Fermentation"': application, report to SERC, etc. | |
| C.334 | SERC grant GR/B/60637 'Kinetics & Stabilities of Biocatalysts in Multi-Liquid Phase Reactions' | 1981-1985 |
| | Contents of Lilly's folder inscribed 'EB.D8.84 SERC Grant "Multi-phase Reactions"': includes final report. | |
| C.335 | SERC grant GR/B 95707 'Stability of Natural and Constructed Plasmids in Chemostat and Pilot Plant Culture' | 1981-1985 |
| | Contents of folder inscribed 'SERC Grant "Plasmid Stability"': grant applications, final report etc. | |
| | This was a joint UCL (Lilly and P.H. Clarke) / Polytechnic of Central London (G.Holt) programme. | |
| C.336 | SERC grant GR/C 17628 'The Integration of Fermentation and Subsequent Processing Operations for Microbial Protein Products' | 1982-1985 |
| | Contents of folder inscribed 'Fish & Lilly EB.E6.8A': application by N.M. Fish and Lilly, etc. | |

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| C.337-C.339 | <p>SERC grant GR/C 70937 'Microbial Halogenation'</p> <p>Contents of folder inscribed 'Microbial Halogenation SERC GR/C 70937' divided into three for ease of reference: applications, research report etc.</p> <p>The application made in 1982 (start date 1/1/83) was submitted by the University of Kent on behalf of the S.E. England Biotechnology Consortium (A.T. Bull, G. Holt and Lilly). An award was not initially recommended and a revised application was submitted.</p> <p>See also C.340-C.342, C.343.</p> | 1982-1988 |
| C.340-C.342 | <p>SERC grant GR/C 70937 'Microbial Halogenation'</p> <p>Contents of untitled folder divided into three for ease of reference: research reports, final report.</p> <p>See also C.337-C.339, C.343.</p> | 1984-1987 |
| C.343 | <p>SERC grant GR/C 70937 'Microbial Halogenation'</p> <p>Contents of untitled folder: final report and related correspondence.</p> <p>The final report was much delayed because of Lilly's serious illness.</p> <p>See also C.337-C.339, C.340-C.342.</p> | 1988 |
| C.344 | <p>SERC grant GR/C 99822 'Fermentation and protein product recovery'</p> <p>'SERC Grant EBF4'. Contents of folder so inscribed: application, research report, etc.</p> <p>The investigators were N.M. Fish, Lilly and M. Hoare.</p> | 1984-1986 |
| C.345, C.346 | <p>SERC 'Spinks' Studentship in Process Engineering in Biotechnology Award 'Design of two liquid-phase biocatalytic reactors'</p> <p>Contents of untitled folder divided into two for ease of reference: application and related correspondence.</p> | 1984-1985 |

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| C.347, C.348 | SERC grant GR/D/32895 'Kinetics of biological reactions involving a reactant-containing organic phase'

'SERC grant EB.90 (1.7.85 - 30.6.88)'. Contents of folder so inscribed divided into two for ease of reference: application, grant report etc. | 1984-1988 |
| C.349 | SERC grant GR/D 75007 'Monitoring of enzymes and proteins during fermentation and downstream processing'

Contents of folder inscribed with the project title: application, research grant report, etc. | 1985-1988 |
| C.349A | SERC Biotechnology Studentship 'Organic phase-biocatalyst interactions'

Contents of folder inscribed with project title: application, etc. | 1985-1986 |
| C.350-C.360 | 'SERC'

Contents of box folder so inscribed divided into eleven for ease of reference: includes drafts and transparencies for presentations.

The papers are presented in the order found.

In January 1986 the SERC Biotechnology Directorate invited proposals from universities for the development of major disciplinary research programmes in biochemical engineering. UCL was shortlisted in May and in September was invited to become a Biochemical Engineering Centre and begin the process of turning UCL's proposal into a formal grant application. See C.361, C.362 | 1986-1988 |
| C.361, C.362 | SERC GR/E 27027 'Integrated Studies in Biochemical Engineering'

Contents of folder inscribed 'Integrated studies in biochem. eng (MDL[jilly]/PD[unhill]/CRT[homas]/MH[oare]/NMF[ish])' divided into two for ease of reference: applications, special research grant announcement, interim report, etc.

This application arose from the selection of UCL as one of two centres for special SERC funding of biochemical engineering. For the background to this application see | 1986-1989 |

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C.350-C.360.

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| C.363 | <p>SERC Biotechnology Directorate research studentship (quota) 'The effect of immobilization on organic phase - enzyme interactions'</p> <p>Contents of folder inscribed with project title: includes application.</p> | 1986-1987 |
| C.364 | <p>SERC CASE [Co-operative Awards in Science and Engineering] Awards</p> <p>Contents of folder inscribed 'CASE Awards': application, correspondence with Pfizer Ltd.</p> | 1990-1994 |
| C.365-C.368 | <p>SERC IRC Studentships</p> <p>Contents of folder inscribed 'IRC Studentships 1991, 1992' divided into four for ease of reference: includes PhD proposals and correspondence and papers <i>re</i> joint training of PhD students with other universities.</p> | 1990-1992 |
| C.369-C.372 | <p>SERC application by A.P. Ison UCL and M. Bushell, Microbial Physiology Group, University of Surrey 'The Influence of Hyphal Morphology on Antibiotic Production in Submerged Culture'</p> <p>Contents of folder inscribed 'Mike Bushell' divided into four for ease of reference: correspondence and papers <i>re</i> joint research proposal of Ison and Bushell.</p> <p>The application to the SERC was rejected in November 1992 'in its present form' and resubmission invited.</p> | 1991-1993 |
| C.373 | <p>SERC grant application 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon Bond Synthesis'</p> <p>Contents of folder inscribed 'UCL/Exeter SERC Grant Application 1992': grant applications from UCL (J.M. Woodley and J.M. Ward) and Exeter (N.J. Turner and A.J. Willetts).</p> <p>Lilly's role in the proposed project was consultative.</p> | 1992 |

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C.374	SERC Biotechnology Directorate Research Studentship 'Downstream Processing from Transketolase Catalysed Biotransformations'. Contents of folder inscribed 'BT [Biotransformation] Research Studentship 1993': includes application. The applicant was J.M. Woodley.	1992-1993
C.375	SERC Applications for Visiting Fellowship Research Grants Two applications only. The proposers were A.P. Ison and J.M. Woodley.	1994
C.376-C.387	University Grants Committee	1982-1992
C.376-C.383	'Grants (Various)' Contents of folder so inscribed divided into eight for ease of reference: correspondence and papers principally <i>re</i> UGC earmarked support for biotechnology and review of the UGC's biotechnology initiative.	1982-1992
C.384-C.387	'UGC Research Plan (Biotechnology)' Contents of folder so inscribed divided into four for ease of reference: includes drafts of 'College Research Plan for Biotechnology'.	1984-1988
C.388-C.401	By research contract client	1968-1993
C.388-C.395	Beecham Research Laboratories	1968-1975
C.388-C.390	'EBJ4 Beecham Grant' Contents of folder so inscribed divided into three for ease of reference: correspondence and papers including letter agreement, research reports, etc. The project involved work with the enzyme penicillin amidase.	1968-1971

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| C.391 | <p>'Beecham EBJ4 Extension'</p> <p>Contents of folder so inscribed: includes 'Proposal for extension to project supported by Beecham Research Laboratories', research report, research agreement, etc.</p> | 1971-1973 |
| C.392-C.395 | <p>'Ferromagnetic Supports'</p> <p>Contents of folder so inscribed divided into four for ease of reference: correspondence and papers <i>re</i> patent questions with Beechams and National Research Development Corporation.</p> | 1971-1975 |
| C.396, C.397 | <p>Mead Research USA</p> <p>Contents of folder inscribed 'Mead' divided into two for ease of reference: correspondence and papers including research reports.</p> <p>The project was titled 'Reactor Evaluation for Enzymic Phenol Oxidations in Aqueous Organic Reaction Media'.</p> | 1989-1991 |
| C.398-C.401 | <p>Sumitomo Chemical Company Japan</p> <p>Contents of folder inscribed 'Sumitomo' divided into four for ease of reference: correspondence and papers <i>re</i> arrangements including quotation.</p> <p>The project was described as 'Research at UCL to be carried out by Sumitomo Chemicals' Researcher'.</p> | 1990-1993 |
| C.402-C.459 | <p>By research topic</p> | 1972-1997 |
| C.402 | <p>'Antibiotic Process Mtgs'</p> <p>Contents of folder so inscribed: minutes of meetings, etc.</p> <p>In fact the folder contained minutes of only one 'Antibiotic Process' meeting. The other minutes are headed 'Streptomyces' meetings.</p> | 1996 |

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| C.403-C.408 | 'Baeyer-Villiger' | 1992-1996 |
| | Contents of folder so inscribed divided into six for ease of reference: correspondence and papers <i>re</i> Baeyer-Villiger Monooxygenase research in collaboration with University of Exeter (S.M. Roberts). | |
| C.409-C.412 | 'Biotransformation Research' | 1994-1997 |
| | Contents of folder so inscribed divided into four for ease of reference: includes agenda and papers for 'Third Annual Research Meeting' on 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon Bond Synthesis', 19 December 1995, etc. | |
| C.413 | 'Cholesterol Project (Northwick Park)' and 'Northwick Park Clinical Centre (Project)' | 1972 |
| | Contents of folder so inscribed: correspondence and papers relating to Cholesterol Oxidase Project, 1972. | |
| C.414-C.422 | 'Collaboration with Exeter' | 1990-1996 |
| | Contents of folder so inscribed divided into nine for ease of reference: correspondence and papers <i>re</i> collaborative project 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon Bond Synthesis'. | |
| | These papers were found in considerable disorder and are presented as found. | |
| | See also C.423-C.425. | |
| C.423-C.425 | 'Exeter Visit' | 1992-1995 |
| | Contents of folder so inscribed divided into three for ease of reference: correspondence and papers <i>re</i> collaboration with Exeter 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon Bond Synthesis'. | |
| | Many of the papers are headed 'Transketolase' or 'Transketolase Project'. | |

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| C.426 | 'Fermentation RAG [Research Advisory Group]' | 1996 |
| | Contents of folder so inscribed: papers for meeting, 8 November 1996. | |
| C.427 | 'Flexible Biotransformations' | 1994 |
| | Contents of folder so inscribed: includes notes sent to Lilly for comment on flexible bioprocessing for biotransformation. | |
| C.428-C.436 | 'Halogenation' | 1983-1985 |
| | Contents of folder so inscribed divided into nine for ease of reference: includes research reports and bibliographical references. | |
| C.437-C.445 | 'Halogenation' | 1985-1986 |
| | Contents of binder so inscribed divided into nine for ease of reference: research notes, research reports, bibliographical references. | |
| C.446, C.447 | '1982 Plasmid Stability' | 1982-1985 |
| | Contents of folder so inscribed divided into two for ease of reference: includes drafts of case for support of proposed investigation 'Stability of Natural and Constructed Plasmids in Chemostat and Pilot Plant Culture'. | |
| C.448, C.449 | 'Protein Processing' | 1986-1989 |
| | Contents of folder so inscribed divided into two for ease of reference: papers <i>re</i> SERC grant of Lilly's UCL colleagues P. Dunnill and M. Hoare 'A biochemical engineering study to improve the separation of biological material, especially proteins' | |
| C.450, C.451 | 'Transketolase Research Grant' | 1994 |
| | Contents of plastic folder so labelled divided into two for ease of reference: '2nd Annual Report (1994)' and papers <i>re</i> organising December 1996 research meeting. | l... |

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These papers relate to collaboration with the University of Exeter 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon- Bond Synthesis'.

The annual report comprises presentations made at the 2nd Annual Research Meeting, 15/16 December 1994.

C.452, C.453 'Transketolase' 1994-1995

Contents of folder so inscribed divided into two for ease of reference: correspondence and papers *re* research meetings, etc.

These papers relate to collaboration with the University of Exeter 'The Development of a Biocatalytic Process for Large Scale Carbon-Carbon- Bond Synthesis'.

Included at C.453 is a photograph of 'Carbons United' including Lilly.

C.454-C.459 'TK[transketolase]' 1996

Contents of folder so inscribed divided into six for ease of reference: BBSRC grant application, papers for UCL-Exeter-Edinburgh-Liverpool Bioconversion Collaborative Group 4th Annual Research Meeting, 6 December 1996.

C.460-C.472 **Patents** 1990-1994

See also C.943.

C.460-C.471 'Patent's application' and 'Image Analysis (Protection)' 1990-1993

Contents of folder so inscribed divided into twelve for ease of reference: correspondence and papers *re* patenting biomass image analysis system.

At C.471 are the contents of a plastic folder found inside the principal folder.

See also C.472.

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- C.472 'Colin Thomas - Grants' 1993-1994
- Contents of folder so inscribed: correspondence and papers *re* patent.
- See also C.460-C.471.
- C.473-C.757 TEACHING AND TRAINING 1959-1998**
- C.473-C.577 'Teaching notes'
- C.578-C.757 'Summer courses'
- C.473-C.577 'Teaching Notes' 1959-1998**
- Contents of Lilly's 'Teaching Notes' boxes.
- The dating of much of this material is problematic.
- C.473-C.475 'Lecture Notes Philadelphia 1969'
- Contents of folder so inscribed divided into three for ease of reference: duplicated manuscript lecture notes 'The Content and Organisation of Cells', 'Production of Enzymes by Microorganisms', 'Disruption of Microorganisms', etc.
- C.476 Contents of untitled folder: typescript notes headed 'Preparation of Immobilised Enzymes', also identified as '© Dunnill & Lilly 1970'; 'Lecture List Enzyme Technology Course, 7-11 September 1970', etc 1970
- Most of the papers in the folder were photocopies of the papers at C.473-C.475, and have not been retained.
- C.477-C.478 'B18 Microbial Product Formation Productivity' 1959-1970
- Contents of folder so inscribed divided into two for ease of reference: manuscript and typescript notes and background material, including notes headed 'Fermentation in Relation to Enzyme Production', also

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identified as '© Dunnill & Lilly 1970'.

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|-------------|--|-----------|
| C.479 | 'Biochemical Reactors' | 1971-1972 |
| | Photocopied pages of figures for Lecture Courses on Fermentation Technology for M.Sc. in Biochemical Engineering. | |
| C.480 | 'E 830 Anaerobic Fermentations' | N.d. |
| | Contents of folder so inscribed: manuscript notes, background material. | |
| | Latest bibliographical reference, 1971. | |
| C.481 | 'E 830 Introduction to Fermentation Technology' | N.d. |
| | Contents of folder so inscribed: manuscript notes, background material. Latest bibliographical reference, 1981. | |
| C.482-C.485 | 'Design Projects' | 1974-1979 |
| | Contents of folder so inscribed divided into four for ease of reference: manuscript notes and drafts, etc. | |
| | Includes photocopied manuscript 'Chapter 3 Medium sterilization' paginated 8-42 and 'Chapter 5 The fermentors design'. | |
| C.486 | 'Introduction to Fermentation Design' | N.d. |
| | Contents of folder so inscribed: manuscript and typescript notes. | |
| | Latest date in notes '17/9/76'. | |
| C.487 | 'Fermentation Kinetics (Batch)' | N.d. |
| | Contents of folder so inscribed: figures, manuscript notes, etc. | |
| | Latest bibliographical reference 1981. | |

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C.488	'M.Sc. Design Project 1982' Contents of folder so inscribed: manuscript notes, letter, 14 November 1981.	1981-1982
C.489-C.492	'Course in Biochemical Engineering' Contents of ring binder so titled divided into four for ease of reference: course outlines, timetables, tutorial and examination arrangements, notes for research students, safety regulations, etc.	1982-1984
C.493-C.495	'Lecture Notes' Contents of folder so inscribed divided into three for ease of reference: papers for overhead projections including transparencies, 'Fermentation Products', 'Types of Fermentation Process', 'Penicillins', etc. Latest bibliographical reference 1986.	N.d.
C.496-C.497	Contents of untitled folder divided into two for ease of reference: manuscript notes, figures, product literature, background papers Latest bibliographical reference, 1987.	N.d.
C.498	Contents of untitled folder: references, figures, notes etc <i>re</i> sterilisation	1987, 1993
C.499-C.507	'Lecture Notes' Contents of folder so inscribed divided into nine for ease of reference, manuscript and typescript notes and drafts, figures, background papers, etc., <i>re</i> fermentation, scale-up, etc.	1988-1996
C.508	Contents of untitled folder: manuscript notes, figures for lectures on ? fermentation technology Includes manuscript notes headed 'B18 - Lecture 4'. Latest bibliographical reference 1989.	N.d.

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C.509-C.512	<p>Contents of untitled binder divided into four for ease of reference: manuscript notes (photocopies) for lecture course or courses, October - December 1989, November 1990 and October-November 1993</p> <p>There is no general heading for the 1989 lectures (C.509, C.510). Titles of individual lectures include 'Enzyme Systems', 'Reactor Systems with Microorganisms', 'Costs of fermentation', 'Continuous culture', etc.</p> <p>The 1990 lectures (C.511) are headed 'Process Development' and the 1993 lectures (C.512) are headed 'Biochem. Eng. Fermentation'.</p>	1989-1993
C.513-C.514	<p>'Teaching'</p> <p>Contents of folder so inscribed divided into two for ease of reference: manuscript notes, typescript drafts, correspondence, lecture lists.</p> <p>Includes material <i>re</i> course planning including courses given by Department of Biochemistry for biochemical engineers.</p>	1990-1993
C.515	<p>'Departmental Lecture Notes'</p> <p>Contents of folder so inscribed: manuscript notes, typescript drafts, correspondence, lecture lists, etc.</p> <p>Includes material <i>re</i> course planning.</p>	1991-1996
C.516	<p>'Industrial Visits'</p> <p>Contents of folder so inscribed: correspondence with industrial colleagues, internal memos, etc.</p>	1991-1995
C.517	<p>'Industrial Fermentation Notes'</p> <p>Contents of folder so inscribed: manuscript notes.</p>	1993
C.518	<p>'E839'</p> <p>Contents of folder so inscribed: includes typescript notes, lecture lists, figures, etc.</p>	1995 /...

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/...

Most of the material is undated.

C.519, C.520

'Introduction to Biochemical Engineering E839 and B.28 (part 1) courses'

1995

Typescript notes *re* lecture courses.

The lecturers were UCL colleagues P. Dunnill, E. Keshavarz-Moore and Lilly.

Two folders.

C.521-C.529

'Lecture Notes'

1995-1997

Contents of folder so inscribed divided into nine for ease of reference: typescript notes, figures, etc.

Titles include 'Fermentation Process Development', 'Fermentation Scale-up', 'Fermentation Sterilisation', etc.

C.530-C.547

Integrated Graduate Development Scheme (IGDS) for Bioprocessing Module 2 Fermentation, Advanced Centre for Biochemical Engineering, UCL

1993-1996

The scheme was sponsored by the Biotechnology and Biological Science Research Council within a scheme operated by the Engineering and Physical Science Research Council.

C.530-C.534

'Fermentation'

1994

Contents of ring binder so labelled divided into five for ease of reference: delegates list, daily programmes, course notes.

This was 'Module 2: Integrated Graduate Development Scheme for Bioprocessing', October 1994-January 1995.

C.535, C.536

'IGDS - Fermentation Module'

1993-1995

Contents of folder so inscribed divided into two for ease of reference: includes papers *re* course preparation, IGDS programme brochure and course feedback.

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C.537-C.538	'Fermentation Kinetics'	1994-1996
	Contents of folder so inscribed divided into two for ease of reference: includes papers <i>re</i> fermentation case study.	
C.539-C.541	'IGDS - BT Module'	1994-1995
	Contents of folder so inscribed divided into three for ease of reference: drafts etc <i>re</i> mock exam questions, practicals, case study for 'IGDS Module 3 Biotransformations'.	
C.542	'IGDS -BT Module'	1995-1996
	Contents of folder so inscribed: drafts <i>re</i> immobilized catalysts, biocatalytic reactors.	
C.543-C.547	'New MSc Course in Bioprocessing (IGDS)'	1993
	Contents of folder so labelled divided into five for ease of reference: correspondence and papers <i>re</i> course administration.	
C.548	A Hands-on Course on Scaling up Technology', Advanced Centre for Biochemical Engineering, UCL, 11-15 April 1994	1994
	Course notes	
C.548A	'Biochemical Engineering Practical Course for the Institute of Biotechnology', Advanced Centre for Biochemical Engineering, UCL, 25-29 April 1994	1994
	Course notes.	
C.549-C.552	Modular Training for the Bioprocess Industries	1995, 1997
	Training courses delivered by the Advanced Centre for Biochemical Engineering at UCL. Lilly contributed to the teaching.	

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|--------|---|------|
| C.549 | 'Fermentation' | 1995 |
| | Contents of ring binder so labelled. This was 'Book 1 of 2'.
In original binder.
Table of contents, daily programme, course notes, etc. | |
| C.549A | 'Fermentation' | 1995 |
| | Contents of ring binder so labelled. This was 'Book 2 of 2'.
In original binder.
Table of contents, daily programme, course notes, etc. | |
| C.550 | 'Principles of Fermentation Processes' | 1997 |
| | Contents of ring binder so labelled.
In original binder.
Delegate profiles, section contents, daily programme, course notes, etc. | |
| C.551 | 'Fermentation Design and Scale-up II The Biology/Engineering Interface' | 1997 |
| | Contents of ring binder so labelled.
In original binder.
Section contents, daily programme, course notes, case studies, etc. | |
| C.552 | 'Fermentation Process Operation' | 1997 |
| | Contents of ring binder so labelled.
In original binder.
Section contents, daily programme, course notes, case studies, etc. | |

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- C.553-C.555 Undated notes and drafts
- C.553 'Enzyme Reactor Kinetics'
 Contents of folder so inscribed.
- C.554 'Biochemical Reactors'
 Contents of folder so inscribed.
- C.555 'Fermentation Kinetics (Continuous)' and 'Continuous Culture E818'
 Contents of folder so inscribed.
- C.556-C.577 Miscellaneous correspondence and papers *re* teaching and training. 1960s -1998
 Many papers found loose.
 22 folders.
 At C.563-C.566 are papers *re* undergraduate course structure and 4-year BEng course in Biochemical Engineering, 1984.
 At C.574, C.575 is background material etc *re* Thames Water sewage treatment etc.
 At C.576, C.577 is background material *re* biochemical engineering courses at other institutions.
- C.578-C.757 '**Summer Courses**' 1967-1996
 Contents of Lilly's 'Summer Courses' boxes.
 These courses were given by UCL staff including Lilly and others for participants from industry and academe, many from overseas.
- C.578-C.680 'Course in Biochemical Engineering' 1979-1991
 Contents of ring binders so labelled: course documentation

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including programme, list of participants, lecture notes etc.

C.578-C.582	'Advanced Biochemical Engineering Course (No.3)' Five folders.	1979
C.583-C.588	'Biochemical Engineering Course (no.4)' Six folders	1980
C.589-C.595	'Biochemical Engineering Summer Course (No.5)' Seven folders.	1981
C.596-C.602	'Biochemical Engineering Course (6)' Seven folders.	1982
C.603-C.610	Biochemical Engineering Summer Course (No.7) Eight folders.	1983
C.611-C.618	'Biochemical Engineering Summer Course (No.8)' Eight folders.	1984
C.619-C.626	'Biochemical Engineering Summer Course (No.9)' Eight folders.	1985
C.627-C.635	'Biochemical Engineering Summer Course (No.10)' Nine folders	1986
C.636-C.644	'Biochemical Engineering Summer Course (No.11)' Nine folders.	1987

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C.645-C.653	'Biochemical Engineering Summer Course (No.12)' Nine folders.	1988
C.654-C.661	'Biochemical Engineering Summer Course (No.13)' Eight folders.	1989
C.662-C.670	'Biochemical Engineering Summer Course (No.14)' Nine folders.	1990
C.671-C.680	'Biochemical Engineering Summer Course (No.15)' Ten folders.	1991
C.681-C.757	Miscellaneous correspondence and papers <i>re</i> summer courses	1970-1996
C.681-C.685	'Enzyme Technology Course' Lecture list, list of participants, lecture notes, etc for course, 7-11 September 1970, found tagged together. Five folders.	1970
C.686-C.687	'Biochemical Engineering Course: Pre-1981 Miscellaneous' Contents of folder so inscribed divided into two for ease of reference: lists of participants, accounts etc.	1977-1981
C.688-C.692	'All correspondence' Contents of folder so inscribed divided into five for ease of reference: correspondence and papers <i>re</i> FEBS [Federation of European Biochemical Societies] Advanced Course No.55 'Biochemical Engineering: the Translation of Biochemistry and Microbiology and Industrial Processes', 11-13 September 1978.	1978

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C.693-C.707	'Summer Course Notes / Old Notes & Drawings'	1973-1979
	Contents of box folder so inscribed divided into fifteen for ease of reference: includes course notes for ? Advanced Biochemical Engineering Course, 10-14 September 1979, a copy of the programme of which is at C.695.	
	At C.702 is copy of 'Biochemical Reactors', Lilly's Plenary Lecture, Achema Congress, Frankfurt, 1973 and at C.704 a copy of 'Developments in Biocatalysis', Lilly's Plenary Lecture at Achema Congress, 22 June 1979.	
	The papers at C.706 were found in a folder inscribed 'Malcolm Lilly' and the papers at C.707 in a folder inscribed 'Methods in Enzymology'.	
C.708-C.710	'BESC 1983 Course Admin'	1982-1983
	Contents of folder so inscribed divided into three for ease of reference: correspondence and papers <i>re</i> arrangements including course questionnaires for 1982 and 1983.	
C.711-C.714	'BESC 1983 Course Enquiries'	1982-1983
	Contents of folder so inscribed: includes registrations.	
C.715	'BESC 1983 Masters'	1983
	Contents of folder so inscribed: information for speakers, participants etc.	
C.716-C.720	'BESC 1984 Admin'	1983-1985
	Contents of folder so inscribed divided into five for ease of reference: includes course questionnaires.	
C.721-C.723	Course notes	1984
	Three folders.	
C.724-C.727	'Summer course'	1984-1988

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Contents of folder so inscribed divided into four for ease of reference: course notes including transparencies, manuscript notes and programmes for 1984 and 1985 meetings.

C.728-C.729	'Biochemical Engineering Summer Course'	1985, 1987
	Contents of folder so inscribed divided into two for ease of reference: photocopied manuscript ? course notes.	
C.730	'BE Short Course'	1988-1989
	Contents of folder so inscribed: annotated course notes, etc.	
C.731-C.733	'BESC 1988'	1987-1988
	Contents of folder so inscribed divided into three for ease of reference.	
C.734-C.735	'BESC 1989'	1988-1989
	Contents of folder so inscribed divided into two for ease of reference: includes course questionnaires.	
C.736-C.737	'BESC 1990'	1989-1990
	Contents of folder so inscribed divided into two for ease of reference: includes course questionnaires.	
C.738	'Lecture notes 14th Biochemical Engineering Summer Course (1990)'	1990
	6pp typescript + figures.	
C.739-C.740	'BESC 1991'	1990-1991
	Contents of folder so inscribed divided into two for ease of reference: includes course questionnaires.	

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| C.741-C.742 | Course notes | ? 1991 |
| | Typescript notes, some annotated; manuscript notes; transparencies etc ? for 1991 course. | |
| | Two folders. | |
| C.743 | 'International Course 1992' | 1991-1992 |
| | Contents of folder so inscribed: correspondence and papers <i>re</i> arrangements. | |
| | The course was cancelled because there were not enough applicants to cover the costs. | |
| C.744-C.750 | Miscellaneous course notes | 1967-1996 |
| | Papers found loose or in unidentified folders. | |
| | Seven folders. | |
| C.751-C.754 | 'Teachers Conference' | 1986-1995 |
| | Contents of folder so inscribed divided into four for ease of reference: programmes, lists of participants, course notes etc for INSET Seminars on Biochemical Engineering and the Biotechnology-Based Industries. | |
| | Papers found with summer course material. | |
| C.755-C.757 | Correspondence and papers <i>re</i> INSET Seminars Biochemical Engineering and the Biotechnology-Based Industries | 1990-1992 |
| | Papers found with summer course material. | |
| | Principally course questionnaires. | |
| | Three folders. | |

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C.758-C.891	PERSONNEL	1964-2002
	An alphabetical sequence of Lilly's 'personnel' files re departmental visitors, research students, etc	
	Includes arrangements to visit, research, publications, career.	
C.758	A.	1980-1989
C.759	Bal.	1971-1981
C.760-C.761	Bar. Two folders.	1995-1997
C.762	Bla.	1992-1994
C.763	Bri.	1970-1971
C.764-C.768	Bro. (1) Five folders.	1998
C.769	Bro. (2)	1979-1984
C.770-C.774	Bu.	1973-1996
C.770	1973-1974	
C.771	1975-1976	

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C.772	1977-1978	
C.773	1979-1980	
C.774	1989-1996	
C.775	Car.	1972-1977
C.776	Cas.	1991
C.777	Cav.	1992
C.778	Che.	1974-2002
	Letter, 26 June 2002, is from Sheila Lilly.	
C.779	Chu.	1974
C.780-C.782	Co.	1994
	Three folders.	
C.783	Cu.	1988-1994
C.784	Dal.	1973-1974
C.785, C.786	Das.	1970-1973
	2 folders.	

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C.787-C.789	Der. 3 folders.	1988-1991
C.790	Dun.	N.d.
C.791	Duv.	1974-1979
C.792	Fl.	1964-1976
C.793-C.795	Fr.	1983-1996
C.793	1983-1985	
C.794	1986-1987	
C.795	1991-1996	
C.796-C.799	Gr.	1969-1987
C.796	1969-1970	
C.797	1971-1974	
C.798	1975-1980	
C.799	1987	
C.800	Hac.	1990-1991

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C.801	Hai	1983-1984
C.802	Hal.	1975
C.803-C.804	Har. 2 folders.	1967-1973
C.805	Hi.	1972-1975
C.806-C.811	Hob. Much of the material was undated and the arrangement is tentative. Six folders.	1991-1994
C.812-C.814	Hu.	1972-1976
C.812	1972-1973	
C.813	1974-1975	
C.814	1973-1976	
C.815	Ja.	1972-1974
C.816-C.822	Jo.	1988-1995
C.816	1988-1991	

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C.817-C.818	1991 Two folders.	
C.819-C.821	1992 Three folders.	
C.822	1993-1995	
C.823	Kap.	1972, 1976
C.824	Kay	1968-1972
C.825	Ke.	1985-1988
C.826	Kl.	1981-1984
C.827	Kr.	1971
C.828-C.829	La.	1972-1975
C.828	1972-1973	
C.829	1974-1975	
C.830	Lil.	1983
C.831	Lim.	1974-1975

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C.832	Mac.	1970-1975
C.833	Mar.	1991-1992
C.834-C.835	Mat. Two folders.	1991-1995
C.836	Mos.	1972-1975
C.837	Ny.	1968
C.838-C.840	Ola.	1975-1994
C.838	1975	
C.839	1976-1980	
C.840	1993-1994	
C.841	O'Ne	1968, 1972
C.842-C.847	Pac. Six folders	1989-1992
C.848	Pal.	1984-1985
C.849	Par.	1976-1986

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C.850-C.851	Reg.	1970-1975
C.850	1970-1971	
C.851	1972-1975	
C.852	Rich.	1973-1974
C.853	Rick.	1971
C.854	Rob.	1969-1974
C.855	Ros.	1992-1994
C.856	Rus.	1986-1992
C.857	Sen.	1978-1979
C.858	Sha.	1968
C.859	Shr.	1988-1991
C.860	Sto.	1995-1996
C.861	Str.	1972-1973
C.862-C.865	Su.	1989
	Four folders.	

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C.866	Tim.	1970
C.867-C.870	Var. Four folders.	1978-1982
C.871	Vil.	1976-1983
C.872	War. (1)	1971-1976
C.873-C.874	War. (2) Two folders.	1989-1992
C.875	Wh.	1971-1976
C.876	Wi.	1967-1968
C.877-C.882	Wo. Six folders.	1988-1998
C.883	Wr.	1989-1990
C.884-C.885	Wy.	1970-1974
C.884	1970-1973	
C.885	1974	
C.886-C.891	Yu.	1989-1991

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C.886	1989-1991	
C.887-C.889	1991 Three folders.	
C.890-C.891	N.d. Two folders.	
C.892-C.971	MISCELLANEOUS	1966-1997
	C.892-C.965	Topics
	C.966-C.971	Shorter correspondence and papers
C.892-C.965	Topics	1966-1997
C.892-C.894	Annual Lecture Correspondence and papers <i>re</i> arrangements for Annual Lecture of the Centre for Biochemical Engineering and Biotechnology. Three folders.	1990-1996
C.895-C.905	Biotechnology Computer Systems Ltd (BCS) Correspondence and papers <i>re</i> joint project between BCS and UCL for the development of 'a "state-of-the-art" computer-based data-logging and control system for biological reactors' (C.902), etc. Eleven folders.	1984-1990
C.906-C.907	Bursaries	1988-1996

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Correspondence and papers *re* departmental bursaries administered by Lilly.

Two folders.

C.908-C.912	'Centre for Biotechnology Architects Drawings' and 'Foster Court'	1982-1984
	Contents of folder so inscribed divided into five for ease of reference.	
C.913	'Equipment for Old Pilot Plant'	1981, n.d.
	Contents of folder so inscribed: includes 'Initial study into the upgrade of the Pilot Project and Control Laboratory and the development of a 21st [?century] Training Facility', n.d.	
C.914-C.929	'Fermenter Drawings'	1966-1987
	Contents of folder so inscribed divided into sixteen for ease of reference: includes product literature.	
C.930-C.941	Link Programme	1990-1995
	This was a research programme at UCL in association with SmithKline Beecham Pharmaceuticals, ICI Biological Products, Shell Research, Unilever Research, the Department of Trade and Industry and SERC.	
	See also C.236-C.304.	
C.930-C.932	'Link Grant'	1990-1995
	Contents of folder so inscribed divided into three for ease of reference: includes correspondence with research partners and papers for presentation.	
C.933-C.941	Progress Reports	1990-1994
C.933	Progress Report No.1 for liaison meeting at UCL on 16th November 1990	1990

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C.934	Progress Report No.2 for liaison meeting at UCL on 8th May 1991	1991
C.935	Progress Report No.3 for liaison meeting at the Shell Centre on 14th November 1991	1991
C.936	Progress Report No.4 for liaison meeting at Unilever House on 8th May 1992	1992
C.937	Progress Report No.5 for liaison meeting at Warren House on 6th November 1992	1992
C.938	Progress Report No.6 for liaison meeting at New Horizons Court on 7th May 1993	1993
C.939	Progress Report No.7 for liaison meeting at UCL on 11th November 1993	1993
C.940	Progress Report No.8 for liaison meeting at UCL on 7th April 1994	1994
C.941	Progress Report No.9	N.d.
C.942	'Old Pilot Plant Re-opening' Contents of folder so inscribed: includes papers <i>re</i> alterations and re-opening, 2 June 1981.	1979-1981
C.943	'Patents' Contents of folder so inscribed: includes correspondence and patent specifications. See also C.460-C.472.	1971-1991

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| C.944-C.946 | 'PhD / RA Notes' | 1982-1997 |
| | Contents of folder so inscribed divided into three for ease of reference: thesis reports, research results, grant application, etc. | |
| C.947-C.948 | 'Provost' | 1980-1986 |
| | Contents of folder so inscribed: correspondence with UCL Provost, Sir James Lighthill. | |
| C.947 | 1980-1981 | |
| C.948 | 1985-1986 | |
| C.949-C.950 | 'Provost's Advisory Group on Bioengineering' | 1992, 1996 |
| | Contents of folder so inscribed divided into two for ease of reference: includes papers for Biotransformation Research Advisory Group. | |
| C.951 | 'Scale Up Review + SB [Smithkline Beecham]' | 1991-1996 |
| | Contents of folder so inscribed: principally <i>re</i> UCL / Smithkline Beecham collaboration on Fermentation Scale-up. | |
| C.952-C.954 | 'SERC Centre' | 1986-1989 |
| | Contents of folder so inscribed divided into three for ease of reference. | |
| | At C.952 is the UCL Department of Chemical and Biochemical Engineering 'Response to the Biochemical Engineering Initiative of the SERC Biotechnology Directorate', latest bibliographical reference 1986. | |
| | See also C.23. | |

University College London, C.1-C.971

C.955-C.963A	'TAU [Tel Aviv University] Collaboration'	1983-1997
	Contents of folder so inscribed: correspondence and papers <i>re</i> collaboration between UCL and Tel-Aviv University.	
	Correspondents include E. Katzir-Katchalski and A. Freeman.	
	See also H.59A.	
C.955	1983	
	Includes programme for conference on 'Achievements and Expected Developments in Biotechnology', Tel-Aviv University, 7-9 June 1983. Lilly talked on immobilized biocatalysts in a session on industrial applications.	
C.956	1991	
C.957	1992	
C.958	1993	
C.959-C.960	1994	
	Two folders.	
	Includes application for a joint UK-Israel Research Grant (C.960).	
C.961	1995	
C.962	1996	
C.963	1997	
C.963A	N.d.	

University College London, C.1-C.971

C.964	'Visitors to UCLbe'	1991, 1993
	Contents of folder so inscribed: correspondence <i>re</i> arrangements, letters of thanks.	
	1993 papers relate to visit from Wageningen Agricultural University, The Netherlands.	
C.965	'Wolfson Application'	1992
	Contents of folder so inscribed: papers relate to proposed new research laboratory for process engineering.	
C.966-C.971	Shorter correspondence and papers	1973-1994
C.966	1973	
C.967	1984-1985	
C.968	1987-1990	
C.969	1991	
C.970	1992-1996	
C.971	N.d.	

SECTION D PUBLICATIONS, D.1-D.366 1962-2003

D.1-D.361A OWN PUBLICATIONS

D.362-D.366 PUBLICATIONS CORRESPONDENCE

D.1-D.361A OWN PUBLICATIONS 1962-2003

The numbering of the papers corresponds with that in the bibliography at A.2.

D.1 (1) 1962 Cell wall precursors in *Escherichia coli* 26-26. *J. Gen. Microbiol.* 28, ii-iii. 1962

Typescript draft and off-print.

D.2 (2) 1962 (With P.H. Clarke) A general structure for cell walls of Gram-negative bacteria. *Nature* 195, 516-517 1962

Off-print only.

D.3 (3) 1963 (With P.H. Clarke and P.M. Meadow) The accumulation of nucleotides by *Escherichia coli* strain 26-26. *J. Gen. Microbiol.* 32,103-116 1963

Contents of Lilly's folder: off-print, drafts, correspondence.

D.4-D.5 (4) 1965 (With R.J. Ertola and F.C. Webb) Production of cell tissue from hydrocarbons by a microbiological process. *Biotechnol. Bioeng.* 7, 309-319 1964-1965

Contents of Lilly's folder divided into two for ease of reference: off-print, correspondence, manuscript and typescript drafts.

D.6 (5) 1965 (With W. Hornby, C. Money and E.M. Crook) Enzymes on solid supports. *Biochem J.* 95, 45-46P 1965

Contents of Lilly's folder: off-print, letter from co-author.

Publications, D.1-D.366

D.7-D.8	(6) 1965 Extraction and separation of nucleotides from <i>Escherichia coli</i> . <i>Biotechnol. Bioeng.</i> 7, 335-342 Contents of Lilly's folder divided into two for ease of reference: off-prints of Lilly's paper and related papers by others, draft, data, etc	1959-1965
D.9	(7) 1966 (With L.P. Hadjipetrou and T. Gray-Young) Effects of ferricyanide on energy production by <i>Escherichia coli</i> . <i>J. Gen. Microbiol.</i> 45, 479-488 Contents of Lilly's folder: off-print, draft	1966
D.10	(8) 1966 (With W.E. Hornby and E.M. Crook) The preparation and properties of ficin chemically attached to carboxymethyl cellulose. <i>Biochem J.</i> 98, 420-425 Contents of Lilly's folder: off-print, draft.	1966
D.11-D.15	(9) 1966 (With W.E. Hornby and E.M. Crook) The kinetics of carboxymethylcellulose-ficin in packed beds. <i>Biochem J.</i> 100, 718-723. Contents of Lilly's folder divided into five for ease of reference: off-print, drafts, correspondence etc.	1966, 1976
D.16-D.17	(10) 1966 (With A. Boddy and P.H. Clarke) Periodic changes in amidase synthesis by <i>Pseudomonas aeruginosa</i> in continuous culture. <i>J. Gen. Microbiol.</i> 45, ii-iii. Contents of Lilly's folder divided into two for ease of reference: photocopy of paper and offprint of later (1967) related paper, correspondence, manuscript notes, figures.	1966-1967
D.18	(11) 1966 (With T. Gray Young and L.P. Hadjipetrou) The theoretical aspects of biochemical fuel cells. <i>Biotechnol. Bioeng.</i> 8, 581-593. Contents of Lilly's folder: off-print, drafts.	1966
D.19-D.20	(12) 1967 (With T.K.N. Baidya and F.C. Webb) The	1966-1967

Publications, D.1-D.366

utilization of mixed sugars in continuous fermentation.
Biotechnol. Bioeng. 9, 195-204

Contents of Lilly's folder divided into two for ease of
reference: off-print, drafts, manuscript notes, figures, etc.

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|-----------|---|-----------|
| D.21 | (13) 1967 (With P. Dunnill, P.M. Dunnill, A. Boddy and M. Houldsworth) The large scale isolation of prolyl-tRNA synthetase from <i>Phaseolus aureus</i> . <i>Biotechnol. Bioeng.</i> 9, 343-356 | 1967 |
| | Contents of Lilly's folder: off-print, draft. | |
| D.22 | (14) 1967 (With D.S. Flynn) A method for the control of the dissolved oxygen tension in microbial cultures. <i>Biotechnol. Bioeng.</i> 9, 515-531. | 1967 |
| | Off-print only. | |
| D.23 | (15) 1967 (With D.S. Flynn, D.G. Kilburn and F.C. Webb) Modifications to the Mackereth oxygen electrode. <i>Biotechnol. Bioeng.</i> 9, 623-625 | 1967 |
| | Off-print only. | |
| D.24 | (16) 1967 Enzyme synthesis in micro-organisms. <i>Process Biochem.</i> 2, February, 17-21 | 1965-1967 |
| | Contents of Lilly's folder: off-print, correspondence, drafts. | |
| D.25-D.26 | (17) 1967 (With A. Boddy, P.H. Clarke and M.A. Houldsworth) Regulation of amidase synthesis by <i>Pseudomonas aeruginosa</i> 8602 in continuous culture. <i>J. Gen. Microbiol.</i> 4S. 137-145 | 1967 |
| | Contents of Lilly's folder divided into two for ease of
reference: proof, drafts | |
| D.27-D.28 | (18) 1967 (With P. Dunnill) Large scale isolation of enzymes. <i>Process Biochem.</i> 2, July, 13-15 | 1967 |
| | Contents of two folders of Lilly's, one inscribed with the
title of the paper and the second inscribed '1967 (Process | |

Publications, D.1-D.366

Biochem) Large scale (General): off-print, correspondence, drafts, manuscript notes, duplicated and printed background material.

- D.29 (19) 1968 (With W.E. Hornby and E.M. Crook) Some changes in the reactivity of enzymes resulting from their chemical attachment to water-insoluble derivatives of cellulose. *Biochem J.* 107, 669-674 1966-1968
- Contents of Lilly's folder: off-print, drafts, correspondence.
- D.30 (20) 1968 (with G. Kay, A.K. Sharp and R.J.H. Wilson) Preparation and use of porous sheets with enzyme action. *Nature* 217, 641-642 1968
- Contents of Lilly's folder: off-print, proof, correspondence.
- D.31 (21) 1968 (With P .H. Clarke and M.A. Houldsworth) Catabolite repression and the induction of amidase synthesis by *Pseudomonas aeruginosa* 8602 in continuous culture. *J. Gen. Microbiol.* 51, 225-234 1968
- Contents of Lilly's folder: off-print only.
- D.32 (22) 1968 (With G. Kay, A.K. Sharp and R.J.H. Wilson) The operation of biochemical reactors using fixed enzymes. *Biochem. J.*, 107, 5P 1967-1968
- Contents of Lilly's folder: off-print, drafts, letter from E.M. Crook.
- D.33-D.37 (23) 1968 (With A.K. Sharp) The kinetics of enzymes attached to water-insoluble polymers. *The Chemical Engineer* 215, 12-18. 1967-1968, 1978
- Contents of Lilly's folder divided into five for ease of reference: off-print, correspondence, drafts, comments of the referees, figures.
- D.38 (24) 1968 (With R.J.H. Wilson and G. Kay) The preparation and kinetics of lactate dehydrogenase attached to water-insoluble particles and sheets. *Biochem J.* 108, 845-853 1968

Publications, D.1-D.366

Contents of Lilly's folder: off-print, draft, figures.

- D.39 (25) 1968 (With R.J.H. Wilson) The kinetics of a novel cyclic reaction system and its use in the assay of polynucleotide phosphorylase or adenosine diphosphate plus adenosine triphosphate. *Biochem J.* 108, 887-895 1968

Contents of Lilly's folder: off-print, draft.

- D.40 (26) 1968 (With R.J.H. Wilson and G. Kay) The preparation and properties of pyruvate kinase attached to porous sheets, and the operation of a two-enzyme continuous-feed reactor. *Biochem J.* 109, 137-141 1968

Contents of Lilly's folder: off-print, draft.

- D.41-D.44 (27) 1968 (With D.A. Self and D.G. Kilburn) The influence of dissolved oxygen partial pressure on the level of various enzymes in mouse LS cells. *Biotechnol. Bioeng.* 10, 815-828 1968

Contents of Lilly's folder divided into four for ease of reference: off-print, correspondence, drafts, figures, manuscript working.

- D.45 (28) 1968 (With P. Dunnill, R.A. Fisher, H. Harris and M. Houldsworth) Large-scale isolation of acid phosphatase from human erythrocytes. *Biotechnol. Bioeng.* 10, 829-843 1968

Contents of Lilly's folder: off-print, draft, figures.

- D.46-D.47 (29) 1969 (With D.G. Kilburn, D.A. Self and F.C. Webb) The effect of dissolved oxygen partial pressure on the growth and carbohydrate metabolism of mouse LS cells. *J. Cell. Sci.* 4, 25-37 1968-1969

Contents of Lilly's folder divided into two for ease of reference: off-print, correspondence, referee's report, drafts.

- D.48-D.49 (30) 1969 (With P.H. Clarke) The regulation of enzyme synthesis during growth. *XIXth Symp. Soc. Gen. Microbiol.* 1967-1969

Publications, D.1-D.366

(ed. P.M. Meadow and S.J. Pirt), pp. 113-159. Cambridge: University Press

Contents of Lilly's folder divided into two for ease of reference: off-print, correspondence, draft, data.

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|-----------|---|------|
| D.50 | (31) 1969 (With P. Dunnill) Enzymes: a new technology. <i>Science Journal</i> April, 59-63 | 1969 |
| | Off-print and duplicated typescript. | |
| D.51 | (32) 1969 (With P.H. Clarke, M. Houldsworth, J.A. Currie and P. Dunnill) The isolation of an aliphatic amidase from <i>Pseudomonas aeruginosa</i> . <i>Biotechnol. Bioeng.</i> 11, 283-292 | 1969 |
| | Contents of Lilly's folder: off-print, drafts. | |
| D.52-D.53 | (33) 1969 (With D.A. Self and G. Kay) The conversion of benzyl penicillin to 6-amino-penicillanic acid using an insoluble derivative of penicillin amidase. <i>Biotechnol. Bioeng.</i> 11, 337-348 | 1969 |
| | Contents of Lilly's folder divided into two for ease of reference: off-print, drafts, figures etc. | |
| D.54 | (34) 1969 (With R.J.H. Wilson) Preparation and use of insolubilised amyloglucosidase for the production of sweet glucose liquors. <i>Biotechnol. Bioeng.</i> 11, 349-362 | 1969 |
| | Contents of Lilly's folder: off-print, draft, figures. | |
| D.55-D.56 | (35) 1969 (With A.K. Sharp and G. Kay) The kinetics of β -galactosidase attached to porous cellulose sheets. <i>Biotechnol. Bioeng.</i> 11, 363-380 | 1969 |
| | Contents of Lilly's folder divided into two for ease of reference: off-print, drafts, figures. | |
| D.57-D.59 | (36) 1969 (With P. Dunnill) Isolation of intracellular enzymes from micro-organisms - the development of a continuous process. In <i>Fermentation Advances</i> (ed. D Perlman), pp. 225-247. New York: Academic Press | 1969 |

Publications, D.1-D.366

Contents of Lilly's folder divided into three for ease of reference: off-print, drafts.

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| D.60 | (37) 1969 (With D.G. Kilburn and F.C. Webb) The energetics of mammalian cell growth. <i>J. Cell. Sci.</i> 4, 645-654

Off-print only. | 1969 |
| D.61 | (38) 1970 (With G. Kay) The chemical attachment of chymotrypsin to water-insoluble polymers using 2-amino-4,6 dichloro-s-triazine. <i>Biochim. Biophys. Acta</i> 198, 276-285

Contents of Lilly's folder: off-print, draft, figures. | 1970 |
| D.62-D.63 | (39) 1970 (With P. Dunnill and J.A. Currie) Continuous enzyme processing: the isolation of prolyl-tRNA synthetase from <i>Phaseolus aureus</i> . <i>Biotechnol. Bioeng.</i> 12, 63-74

Contents of Lilly's folder so inscribed divided into two for ease of reference: off-print, correspondence, drafts. | 1969-1971 |
| D.64 | (40) 1970 (With L. Hadjipetrou and P. Kourounakis) Effect of ferricyanide on <i>Escherichia coli</i> . <i>Antonie van Leeuwenhoek</i> 36, 531-540

Off-print only. | 1970 |
| D.65-D.70 | (41) 1971 (With P.J. Hetherington, M. Follows and P. Dunnill) Release of protein from baker's yeast (<i>Saccharomyces cerevisiae</i>) by disruption in an industrial homogeniser. <i>Trans. Instn. Chem. Engrs.</i> 142-148

Contents of Lilly's folder divided into six for ease of reference: off-print, correspondence, drafts, figures, etc. | 1970-1971 |
| D.71-D.72 | (42) 1971 (With J.R. Wykes and P. Dunnill) Conversion of tyrosine to L-dihydroxy-phenylalanine using immobilised tyrosinase. <i>Nature</i> 230, 187 | 1970-1971 |

Publications, D.1-D.366

Contents of Lilly's folder divided into two for ease of reference: off-print, drafts, figures, duplicated background papers.

- D.73 (43) 1971 (With S.P. O'Neill, J.R. Wykes and P. Dunnill) 1970-1971
An ultrafiltration-reactor system using a soluble immobilized enzyme. *Biotechnol. Bioeng.* 13, 319-322.

Contents of Lilly's folder: off-print, correspondence, drafts.

- D.74-D.75 (44) 1971 (With S.P. O'Neill and P. Dunnill) A comparative 1970-1971
study of immobilised amyloglucosidase in a packed bed reactor and a continuous feed stirred tank reactor. *Biotechnol. Bioeng.* 13, 337-352

Contents of Lilly's folder so inscribed divided into two for ease of reference: off-print, correspondence, drafts.

- D.76-D.77 (45) 1971 (With M. Follows, P.J. Hetherington and P. 1971
Dunnill) Release of enzymes from baker's yeast by disruption in an industrial homogeniser. *Biotechnol. Bioeng.* 13, 549-560.

Contents of Lilly's folder divided into two for ease of reference: off-print, correspondence, drafts, figures.

- D.78 (46) 1971 Stability of immobilised, β -galactosidase on 1971
prolonged storage. *Biotechnol. Bioeng.* 13, 589

Contents of Lilly's folder: offprint, draft.

- D.79 (47) 1971 (With P.R. Foster and P. Dunnill) Salting-out of 1971
enzymes with ammonium sulphate. *Biotechnol. Bioeng.* 13, 713-718

Contents of Lilly's folder: offprint, letter to journal editor, drafts, figures.

- D.80 (48) 1971 (With S.P. O'Neill and P.N. Rowe) Multiple 1971
steady states in continuous flow stirred tank enzyme reactors. *Chem. Eng. Sci.* 26, 173-175

Contents of Lilly's folder: offprint, drafts, figures etc.

Publications, D.1-D.366

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|-----------|---|------|
| D.81-D.84 | (49) 1971 (With P. Dunnill) Biochemical reactors. <i>Process Biochem.</i> 6, 29-32

Contents of Lilly's folder divided into four for ease of reference: offprint, correspondence, notes and drafts | 1971 |
| D.85 | (50) 1971 (With P. Dunnill) The problems of large-scale extraction and purification of microbial enzymes. <i>J. Gen. Microbiol.</i> 65, ix

Offprint only. | 1971 |
| D.86 | (51) 1971 (With P.J. Robinson and P. Dunnill) Porous glass as a solid support for immobilisation or affinity chromatography of enzymes. <i>Biochim. Biophys. Acta</i> 242,659-661

Contents of Lilly's folder: offprint, correspondence, draft | 1971 |
| D.87-D.88 | (52) 1971 (With J.R. Wykes and P. Dunnill) Immobilisation of α -amylase by attachment to soluble support materials. <i>Biochim. Biophys. Acta</i> 250, 522-529.

Contents of Lilly's folder divided into two for ease of reference: offprint, drafts. | 1971 |
| D.89 | (53) 1972 (With K. Balasingham, D. Warburton and P. Dunnill) The isolation and kinetics of penicillin amidase from <i>Escherichia coli</i> . <i>Biochim. Biophys. Acta</i> 276, 250-256.

Contents of Lilly's folder: offprint, correspondence. | 1972 |
| D.90-D.91 | (54) 1972 (With P.J. Robinson and P. Dunnill) Factors affecting scale-up of affinity chromatography of β -galactosidase. <i>Biochim. Biophys. Acta</i> 282,28-35

Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts, etc. | 1972 |
| D.92-D.93 | (55) 1972 (With D. Warburton, K. Balasingham and P. Dunnill) The preparation and kinetics of immobilised | 1972 |

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penicillin amidase from *Escherichia coli*. *Biochim. Biophys. Acta* 284, 278-284

Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.

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| D.94 | (56) 1972 (With J.R. Wykes and P. Dunnill) The preparation of soluble high molecular weight NAD derivative active as a cofactor. <i>Biochim. Biophys. Acta</i> 286, 260-268 | 1972-1973 |
| | Contents of Lilly's folder: offprint, correspondence, draft. | |
| D.95-D.98 | (57) 1972 (With J.A. Currie and P. Dunnill) Release of protein from bakers' yeast, <i>Saccharomyces cerevisiae</i> by disruption in an industrial agitator mill. <i>Biotechnol. Bioeng.</i> 14, 725-736 | 1972 |
| | Contents of Lilly's folder divided into four for ease of reference: offprint, drafts. | |
| D.99-D.100 | (58) 1972 (With P. Dunnill) Continuous enzyme isolation. <i>Biotechnol. Bioeng. Symp.</i> 3, 97-113 | 1972 |
| | Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts. | |
| D.101 | (59) 1972 (With P. Dunnill) Engineering aspects of enzyme reactors. <i>Biotechnol. Bioeng. Symp.</i> 3, 221-227 | 1971-1972 |
| | Contents of Lilly's folder: offprint, correspondence, drafts. | |
| D.102 | (60) 1972 (With P.P. Gray and P. Dunnill) Kinetics of β -galactosidase production by a constitutive mutant of <i>Escherichia coli</i> . <i>J. Ferment. Technol.</i> 50, 381-387 | 1972 |
| | Contents of Lilly's folder: offprint, draft, etc. | |
| D.103 | (61) 1972 The use of immobilised enzymes in reactors. <i>Proc. Conf. on Solid Phase Proteins</i> . pp. 75-77. Seattle: Batelle Institute | 1972 |
| | Offprint only. | |

Publications, D.1-D.366

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| D.104 | (62) 1972 (With P.P. Gray and P. Dunnill) The continuous-flow isolation of enzymes. <i>Proc. IV I.F.S. Conf.</i> pp. 347 - 351. Japan: Society of Fermentation Technology

Contents of Lilly's folder: off-print, correspondence, drafts. | 1972 |
| D.105 | (63) 1972 (With K. Balasingham, D. Warburton and P. Dunnill) Immobilised enzyme reactors. <i>Proc. IV I.F.S. Conf.</i> pp. 379-381. Japan: Society of Fermentation Technology

Contents of Lilly's folder: offprint, drafts. | 1972 |
| D.106 | (64) 1972 The use of immobilised enzymes in the food industry. <i>Proc. Int. Symp. Conversion and Manufacture of Foodstuffs by Microorganisms.</i> pp. 65-74. Tokyo: Saikon Pub. Co. Ltd

Offprint only. | 1972 |
| D.107 | (65) 1973 (With D. Warburton and P. Dunnill) Conversion of benzylpenicillin to 6-aminopenicillanic acid in a batch reactor and continuous feed-stirred tank reactor using immobilised penicillin amidase. <i>Biotechnol. Bioeng.</i> 15, 13-25

Contents of Lilly's folder: offprint, correspondence, draft. | 1973 |
| D.108 | (66) 1973 (With G. Street, P. Dunnill and V.A.S. Glover) Large scale isolation of choline acetyltransferase from ox brains. <i>Biotechnol. Bioeng.</i> 15, 271-283

Contents of Lilly's folder: offprint, correspondence, draft. | 1973 |
| D.109 | (67) 1973 (With P.P. Gray and P. Dunnill) The clarification of mechanically disrupted yeast suspensions by rotary vacuum precoat filtration. <i>Biotechnol. Bioeng.</i> 15, 309-320

Contents of Lilly's folder: offprint, correspondence, draft. | 1973 |
| D.110 | (68) 1973 (With P.J. Robinson and P. Dunnill) The properties of magnetic supports in relation to immobilised | 1973 |

Publications, D.1-D.366

enzyme reactors. *Biotechnol. Bioeng.* 15, 603-606

Contents of Lilly's folder: offprint, correspondence, drafts.

- D.111 (69) 1973 (With P.P. Gray and P. Dunnill) The effect of controlled feeding of glycerol on β -galactoside production by *Escherichia coli* in batch culture. *Biotechnol. Bioeng.* 15, 1179-1188 1973
- Contents of Lilly's folder: offprint, correspondence, drafts.
- D.112 (70) 1973 (With S.P. O'Neill and P. Dunnill) The bioengineering of immobilised enzymes. *Biochimie* 55, 985-990 1973
- Contents of Lilly's folder: offprint, correspondence, drafts.
- D.113-D.114 (71) 1973 (With P.R. Foster and P. Dunnill) The precipitation of enzymes from cell extracts of *Saccharomyces cerevisiae* by polyethyleneglycol. *Biochim. Biophys. Acta* 317, 505-516 1973
- Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.
- D.115-D.116 (72) 1974 (With B.C. Buckland, W. Richmond and P. Dunnill) The large-scale isolation of intracellular microbial enzymes: cholesterol oxidase from *Nocardia*. In *Industrial Aspects of Biochemistry* (ed. B. Spencer). pp. 65-79. Amsterdam: FEBS 1973-1974
- Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.
- D.117 (73) 1974 (With D.L. Regan and P. Dunnill) Immobilized enzyme reactor stability: attrition of the support material. *Biotechnol. Bioeng.* 16, 333-343 1974
- Contents of Lilly's folder: offprint, correspondence, draft.
- D.118-D.119 (74) 1974 (With P. Dunnill) Teaching and research in biochemical engineering. *The Chemical Engineer* 286, 396-398 1974

Publications, D.1-D.366

Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.

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|-------------|---|-----------|
| D.120 | (75) 1974 (With P. Dunnill) Recent developments in enzyme isolation processes. In <i>Enzyme Engineering</i> vol. 2, (ed. E.K. Pye and L.B. Wingard Jr.), pp. 43-45. New York: Plenum Press | 1973-1974 |
| | Contents of Lilly's folder: offprint, correspondence, drafts. | |
| D.121-D.122 | (76) 1974 (With D.L. Regan and P. Dunhill) Well-mixed immobilized enzyme reactors. In <i>Enzyme Engineering</i> , vol. 2, (ed. E.K. Pye and L.B. Wingard Jr.), pp. 245-251. New York: Plenum Press | 1973-1974 |
| | Contents of Lilly's folder divided into two for ease of reference: off-print, correspondence, drafts. | |
| D.123-D.124 | (77) 1974 Biochemische reaktoren. <i>Chemie. Ingenieur Technik</i> 46, 684-689 | 1973-1974 |
| | Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, English and German versions etc. | |
| D.125-D.126 | (78) 1974 (With P. Dunnill) Purification of enzymes using magnetic bio-affinity. <i>Biotechnol. Bioeng.</i> 16, 981- 990 | 1974 |
| | Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts. | |
| D.127-D.129 | (79) 1974 (With D.L. Regan and P. Dunnill) Influence of intraparticle diffusional limitation on the observed kinetics of immobilized enzymes and on catalyst design. <i>Biotechnol. Bioeng.</i> 16, 1081-1093 | 1974 |
| | Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, drafts, manuscript working. | |
| D.130-D.132 | (80) 1974 (With P.J. Robinson, M.A. Wheatley, J.-C. Lanson and P. Dunnill) Pilot scale affinity chromatography: | 1974 |

Publications, D.1-D.366

purification of β -galactosidase. *Biotechnol. Bioeng.* 16, 1103-1112

Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, drafts.

- D.133-D.135 (81) 1975 (With J.R. Wykes and P. Dunnill) Cofactor recycling in an enzyme reactor. A comparison using free and immobilized dehydrogenases with free and immobilized NAD. *Biotechnol. Bioeng.* 17, 51-68 1974-1975

Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, drafts.

- D.136-D.138 (82) 1975 (With B.C. Buckland and P. Dunnill) The enzymatic transformation of water-insoluble reactants in non-aqueous solvents. Conversion of cholesterol to cholest-4-ene-3-one by a *Nocardia* sp. *Biotechnol. Bioeng.* 17, 815-826 1975

Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, drafts.

- D.139-D.141 (83) 1975 (With P. Dunnill) Protein extraction and recovery from microbial cells. In *Single Cell Protein II* (eds. S.R. Tannenbaum and D.I.C. Wang), 179-207. Cambridge Mass.: MIT Press 1975

Contents of Lilly's folder divided into three for ease of reference: photocopy of published text, letter to publisher, drafts.

- D.142-D.146 (84) 1975 (With K. Das and P. Dunnill) Affinity chromatography of enzyme cofactors: the separation of NAD on immobilised dehydrogenase columns. *Biochim. Biophys. Acta*, 397, 277-287 1974-1975

Contents of Lilly's folder divided into five for ease of reference: offprint, correspondence, drafts.

- D.147-D.149 (85) 1975 (With C.J.L. MacLeod and P. Dunnill) The synthesis of β -galactosidase by constitutive and other regulatory mutants of *Escherichia coli* in chemostat culture. *J. Gen. Microbiol.* 89, 221-228 1975

Publications, D.1-D.366

Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, drafts.

- D.150 (86) 1975 (With P.A. Munro and P. Dunnill) Magnetic particles as supports in immobilised enzyme reactor. *IEEE Trans. on Magnetics*, MAG-11 (5), 1573-1575. 1975

Contents of Lilly's folder: photocopy of published text.

- D.151 (87) 1975 (With P. Dunnill) Biochemical engineering teaching: a foundation for the biological industries. *Process Biochem.* 10, 17-20 1975

Offprint only.

- D.152-D.159 (88) 1976 (With P.R. Foster and P. Dunnill) The kinetics of protein salting-out: precipitation of yeast enzymes by ammonium sulfate. *Biotechnol. Bioeng.* 18, 545-580 1975-1976

Contents of Lilly's folder divided into eight for ease of reference: offprint, correspondence, drafts.

- D.160-D.161 (89) 1976 (With B.C. Buckland and P. Dunnill) The kinetics of cholesterol oxidase synthesis by *Nocardia rhodochrous*. *Biotechnol. Bioeng.* 18, 601-621 1975-1976

Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.

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Publications, D.1-D.366

- D.301 (190) 1994 (With N. Rosen, J.M. Woodley and A.T. Bull) Enzymatic dehalogenation of halo-alkanes and halo-alcohols. *Proc. 1994 I. Chem. E. Research Event*, pp. 91-93. Rugby: I. Chem. E. 1994
- Offprint only.
- D.302 (191) 1994 (With G.R. Hobbs, C. French, M. Gyamerah, G. Morris, N.J. Turner, J.M. Ward, A.J. Willetts and J.M. Woodley). Development of a process for transketolase catalysed carbon-carbon bond formation. *Proc. 1994 I. Chem. E. Research Event*, pp.247-249. Rugby: I. Chem. E. 1994
- Offprint only.
- D.303 (192) 1994 (With G.R. Hobbs., N.J. Turner, J.M. Ward and J.M. Woodley) Transketolase production for use as a catalyst for carbon-carbon bond formation. *Proc. 1994 I. Chem. E..Research Event*, pp. 289-291. Rugby: I. Chem. E. 1994
- Offprint only.
- D.304 (193) 1994 (With A.B. Russell and C.R. Thomas) The influence of vessel height and top-section size on the hydrodynamic characteristics of airlift fermenters. *Biotech. Bioeng.* 43, 69-76 1994
- Contents of Lilly's folder: offprint, figures, correspondence, referees' comments
- D.305 (194) 1994 (With C.J. Hack, J.M. Woodley and J.M. Liddell) The production of *Pseudomonas putida* for the hydroxylation of toluene to its *cis*-glycol. *Appl. Microbiol. Biotechnol.* 41, 495-499 1994
- Contents of Lilly's folder: offprint, draft.
- D.306 (195) 1994 (With P. Ayazil Shamlou, D.J. Pollard and A.P. Ison) Gas holdup and liquid circulation rate in concentric-tube airlift bioreactors. *Chem. Eng. Sci.* 49, 303-312 1994
- Contents of Lilly's folder: offprint, correspondence, draft.

Publications, D.1-D.366

- D.307 (196) 1994 (With P. Ayazi Shamlou, H. Makiagamsar, A.P. Ison and C.R. Thomas) Turbulent breakage of filamentous microorganisms in submerged culture in mechanically stirred bioreactors. *Chem. Eng. Sci.* 49, 2621-2631 1994
- Offprint only.
- D.308 (197) 1994 (With M.E. Cavanagh, A.P. Ison, S.W. Carleysmith and J. Edwards) The utilisation of lipids during *Streptomyces* fermentations. *Trans. I. Chem. E.* 72 C, 14-16 1994
- Offprint only.
- D.309-D.311 (198) 1994 (With J.M. Woodley) Biotransformation reactor selection and operation. In *Applied Biocatalysis* (ed. J.M.S. Cabral, D. Best, L. Boross and J. Tramper), pp. 371-394. Chur: Harwood Academic 1992-1994
- Contents of Lilly's folder divided into three for ease of reference: copy of published text, correspondence, draft.
- D.312 (199) 1994 (With G.R. Hobbs, N.J. Turner, J.M. Ward and J.M. Woodley) Development of transketolase as a catalyst for carbon-carbon bond formation. *Prog. Biotechnol.* 9, 463-466 1994
- Offprint only.
- D.313 (200) 1994 With M. Suphantharika, A.P. Ison and B.C. Buckland) The influence of dissolved oxygen tension on the synthesis of the antibiotic diffidin by *Bacillus subtilis*. *Biotechnol. Bioeng.* 44, 1007-1012 1994
- Contents of Lilly's folder: photocopy of published text, drafts, referee's comments and response.
- D.314 (201) 1994 (With H.L. Packer and C.R. Thomas) The effect of high speed blending upon *Penicillium chrysogenum*. *Biotechnol. Techniques*, 8, 601-604 1994
- Offprint only.

Publications, D.1-D.366

- D.315 (203) 1995 (With S.J. Warren, E. Keshavarz-Moore, C.R. Thomas and K. Dixon) Rheologies and morphologies of three Actinomycetes in submerged culture. *Biotechnol. Bioeng.* 45, 80-85. 1994-1995
- Contents of Lilly's folder: offprint, referees' comments, draft.
- D.316-D.317 (204) 1995 (With A.B. Russell and C.R. Thomas) Oxygen transfer measurements during yeast fermentation in a pilot-scale airlift fermenter. *Bioprocess Engineering* 12, 71-79 1995
- Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, drafts.
- D.318 (205) 1995 (With S.J. Warren, E. Keshavarz-Moore, P. Ayazi Shamlou, C.R. Thomas and K. Dixon) Rheological measurements of three different Actinomycetes in submerged culture. *Bioprocess Engineering* 13, 45-48 1995
- Contents of Lilly's folder: photocopy of published paper, correspondence.
- D.319 (206) 1995 (With C. T. Marshall, K. Gbwewonyo and B.C. Buckland) Use of comparative reasoning tools for evaluation of the effect of sterilization conditions on fermentations to produce acidic fibroblast growth factor. *Biotechnol. Bioeng.* 47, 688-695 1995
- Photocopy of published paper.
- D.320 (207) 1995 (With G.A. Dervakos, J.M. Woodley and J. Washbrook) Use of an intelligent knowledge-based system for the design of biotransformation processes. *Trans. I. Chem. E.* 73 C, 133-139 1995
- Contents of Lilly's folder: offprint, correspondence, referees' reports, draft.
- D.321 (208) 1995 (With M. Suphantharika and A.P. Ison) The effect of cycling dissolved oxygen tension on the synthesis of the antibiotic difficidin by *Bacillus subtilis*. *Bioprocess Engineering* 12, 181-186 1995

Publications, D.1-D.366

Contents of Lilly's folder: photocopy of published paper, figures.

- D.322 (209) 1995 (With J.A. Littlechild, N.J. Turner, G.R. Hobbs, A. Rawas and H.C. Watson) Crystallisation and preliminary x-ray crystallographic data with *Escherichia coli* transketolase. *Acta Cryst. D*, 51, 1074-1076 1995
- Offprint only.
- D.323 (210) 1996 (With T. Keshavarz and C. Bucke) Problems in scale-up of immobilised cell cultures. In *Immobilised cells: Basics and Applications* (ed. R.H.Wijffels, R.M. Buitelaar and C. Bucke), pp. 505-510. Amsterdam: Elsevier 1996
- Offprint only.
- D.324 (211) 1996 (With R.H. Wijffels, R.M. Buitelaar, C. Bucke, P.B. Poulsen, P.S.J. Cheetham and J. Tramper) Guidelines for the characterization of immobilized cells. In *Immobilized Cells: Basics and Applications* (ed. R.H. Wijffels, R.M. Buitelaar, C. Bucke and J. Tramper), p.831-834. Amsterdam: Elsevier 1996
- Contents of Lilly's folder: offprint, correspondence including *re* arrangements for conference on immobilized cells.
- D.325 (212) 1996 (With G.R. Hobbs, R.K. Mitra, R. Chauhan and J.M. Woodley) Enzyme-catalysed carbon-carbon bond formation: large-scale production of *Escherichia coli* transketolase. *J. Biotechnol.* 45, 173-179 1996
- Contents of Lilly's folder: offprint, drafts.
- D.326-D.327 (213) 1996 (With R. Chauhan, C. French, M. Gyamerah, G.R. Hobbs, A. Humphrey, J.A. Littlechild, R. Mitra, G. Morris, M. Rupprecht, N.J. Turner, J.M. Ward, A. Willetts and J.M. Woodley) Carbon-carbon bond synthesis: the impact of rDNA technology on the production and use of *E. coli* trans-ketolase. *Annals N. Y. Acad. Sci.* 782, 513-525 1994-1996
- Contents of Lilly's folder: photocopy of published paper,

Publications, D.1-D.366

correspondence, referees' comments, drafts.

- D.328 (214) 1996 (With K.G. Morris, M.E.B. Smith, N.J. Turner, R.K. Mitra and J.M. Woodley) Transketolase from *Escherichia coli*: a practical procedure for using the biocatalyst for asymmetric carbon-carbon synthesis. *Tetrahedron Asymmetry*, 7, 2185-2188 1996
- Offprint only.
- D.329-D.330 (215) 1996 Biotransformations using immobilized biocatalysts. In *Advances in Molecular and Cell Biology*, vol. 15 A (ed. Bengt Danielson), pp. 139-147. London: JAI Press 1992-1996
- Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, draft.
- D.331 (216) 1996 (With J.M. Woodley) Selection and design of biotransformation processes. *Chem. Eng.* 611, 28-30 1996
- Contents of Lilly's folder: offprint, draft.
- D.332 (217) 1996 (With J.M. Woodley and R.K. Mitra) Carbon-carbon bond synthesis: reactor design and operation for transketolase catalysed transformations. *Ann. N. Y. Acad. Sci.* 799, 434-445 1996
- Offprint only.
- D.333 (218) 1996 (With S.P. Brocklebank, R.K. Mitra and J.M. Woodley) Carbon-carbon bond synthesis: preparation and use of immobilised transketolase. *Ann. N. Y. Acad. Sci.* 799, 729-736 1995-1996
- Contents of Lilly's folder: copy of ? published text, letter re acceptance of paper of this title for a conference poster presentation.
- D.334-D.335 (219) 1996 (With J.M. Woodley) A structured approach to design and operation of biotransformation processes. *J. Ind. Microbiol.* 17, 24-29 1996

Publications, D.1-D.366

Contents of Lilly's folder divided into two for ease of reference: offprint, letter enclosing revised draft, photograph, figures, drafts.

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|-------|---|------|
| D.336 | (220) 1996 (With D.J. Pollard, P. Ayazi Shamlou and A.P. Ison) <i>Saccharomyces cerevisiae</i> fermentation in a pilot airlift bioreactor: comparison of air sparger configurations. <i>Bioprocess Engineering</i> 15, 179-288 | 1996 |
| | Offprint only. | |
| D.337 | (221) 1996 (With S. Blayer, J.M. Woodley and M.J. Dawson) Characterisation of the chemo-enzymatic synthesis of N-acetyl- Δ -neuraminic acid (Neu5Ac). <i>Biotechnol. Progr.</i> 12, 758-763 | 1996 |
| | Offprint only. | |
| D.338 | (222) 1996 (With M. Sarra and A.P. Ison) The relationship between biomass concentration, determined by a capacitance-based probe, rheology and morphology of <i>Saccharopolyspora erythraea</i> cultures. <i>J. Biotechnol.</i> 51, 157-165 | 1996 |
| | Contents of Lilly's folder: offprint, drafts. | |
| D.339 | (223) 1996 (With S.M. Heydarian and A.P. Ison) The effect of culture conditions on the productivity of erythromycin by <i>Saccharopolyspora erythraea</i> in batch culture. <i>Biotechnol. Lett.</i> 18, 1181-1186 | 1996 |
| | Contents of Lilly's folder: figures only. | |
| D.340 | (224) 1997 The development of biochemical engineering science in Europe. <i>J. Biotechnol.</i> 59, 11-18 | 1997 |
| | Contents of Lilly's folder inscribed by Sheila Lilly 'First Lecture given by MDL at Opening of ESBES I introduced by Karel Luyben 'as the "father" of European Biochemical Engineering': offprint, draft, figures. | |
| D.341 | (225) 1997 (With D.J. Pollard, A.P. Ison and P. Ayazi Shamlou) Influence of a propeller on <i>Saccharomyces</i> | 1997 |

Publications, D.1-D.366

cerevisiae fermentations in a pilot-scale bioreactor.
Bioprocess Engineering 16, 274-279

Contents of Lilly's folder: offprint, figures.

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|-------------|---|-----------|
| D.342-D.343 | (226) 1997 (With R.M. Lynch and J. M Woodley) Process design for the oxidation of fluorobenzene to fluorocatechol by <i>Pseudomonas putida</i> . <i>J. Biotechnol.</i> 58, 167-175 | 1997 |
| | Contents of Lilly's folder divided into two for ease of reference: offprint, correspondence, referee's comments, drafts. | |
| D.344 | (227) 1997 (With S.S. Barclay, P. Spargo, A. Pettman and J.M. Woodley) Production of Baeyer Villiger mono-oxygenase for synthetic biotransformation. <i>Proc. 1997 I. Chem. E. Research Event</i> , pp. 981-984. Rugby: I. Chem. E. | 1997 |
| | Offprint | |
| D.345-D.346 | (228) 1998 (With R.K. Mitra and J.M. Woodley) Transketolase catalysed carbon-carbon bond formation: biotransformation characterisation for process evaluation and selection. <i>Enzyme Microbiol. Technol.</i> 22, 64-67 | 1996-1998 |
| | Contents of Lilly's folder divided into two for ease of reference: offprint, drafts. | |
| D.347 | (229) 1998 (With D.J. Pollard, A.P. Ison and P.A Shamlou) Reactor heterogeneity with <i>Sacchropolyspora erythraea</i> airlift fermentations. <i>Biotechnol. Progress</i> 58, 453-463 | 1998 |
| | Offprint only. | |
| D.348-D.350 | (230) 1998 (With A. Freeman) Effect of processing parameters on the feasibility and operational stability of immobilized viable microbial cells. <i>Enzyme Microb. Technol.</i> 23, 335-345. | 1998 |
| | Contents of Lilly's folder divided into three for ease of reference: offprint, correspondence, referee's comment, drafts. | |

Publications, D.1-D.366

- D.351 (231) 1998 (With M. Hogan and J.M. Woodley) 1998
Biocatalytic Baeyer-Villiger characterisation leading to
reactor design. *Proc. 1998 Chem. E. Research Event*, pp.
446-514. Rugby: I. Chern. E.
Offprint only.
- D.352 (232) 1999 (With R.K. Mitra and J.M. Woodley) 1999
Process implications of aldehyde properties on transketolase-
catalysed condensations. *Biocatalysis and
Biotransformation* 17, 21-36
Offprint only.
- D.353 (233) 1999 (With S. Brocklebank and J.M. Woodley) 1999
Immobilised transketolase for carbon-carbon bond
synthesis: biocatalytic stability. *J. Mol. Catal. B Enzymatic*,
295, 191-200
Offprint only.
- D.354 (234) 1999 (With S. Blayer, J.M. Woodley and M.J.
Dawson) Alkaline biocatalysis for the direct synthesis of
N-acetyl-D-neuraminic acid (Neu5Ac) from N-acetyl-D-
glucosamine (GlcNAc). *Biotech. Bioeng.* 66, 131-136
Offprint only.
- D.355 (235) 2000 (With S.M. Heydarian, A.P. Ison and P.A.
Ayazi-Shamlou) Turbulent breakage of filamentous
bacteria in mechanically agitated batch culture. *Chem.
Eng. Sci.* 55, 1775-1784
Offprint only
- D.356 (236) 2000 (With C.J. Hack, J.M. Woodley and J.M.
Liddell) Design of a fed-batch control system for microbial
hydroxylation of toxic substrates. *Enzyme Microb.
Technol.* 26, 530-536
Offprint only.

Publications, D.1-D.366

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|-------------|--|---------------|
| D.357 | (238) 2003 (With M. Shimizu and J.M. Woodley) Regiospecific naphthalene monohydroxylation by a recombinant yeast producing a P4501A1-yeast reductase fused enzyme. <i>Enzyme Microb. Technol.</i> 33, 606-611 | 2003 |
| | Offprint only. | |
| D.358-D.361 | 'Unpublished' | c.1985-2003 |
| | Contents of folder so inscribed. | |
| D.358 | (with W.K. Lang, A.N.C. Weir, G. Holt and A.T. Bull) The effects of successive mutation on the growth kinetics of <i>Bacillus subtilis</i> NC1B 3610 Overproducing L-Lysine | c. 1985, 2003 |
| | Typescript draft with manuscript note from Lilly to Bull on title page, latest bibliographical reference, 1985; correspondence, 2003 between Sheila Lilly and Bull as to whether the paper had been published. | |
| D.359-D.360 | (with P. Mohan and A.P. Ison) Influence of the Engineering Environment on the Morphology of <i>S. eythraea</i> | c.1994 |
| | Typescript drafts with manuscript amendment, marginal emphasis etc, latest bibliographical reference, 1994. | |
| | Two folders. | |
| D.361 | Untitled | c.1995 |
| | Typescript draft with manuscript revision, latest bibliographical reference, 1995. | |
| D.361A | 'An Engineering Review of Bioreaction Scale up' | N.d. |
| | Typescript draft, etc for paper by P. Mohan, A.P. Ison and Lilly, latest bibliographical reference 1994. | |
| | ? Unpublished. | |

Publications, D.1-D.366

D.362-D.366	PUBLICATIONS CORRESPONDENCE	1969-1998
D.362	<i>Biocatalysis</i> Correspondence <i>re</i> Lilly joining the editorial board, reviewing papers, etc.	1991-1992
D.363-D.364	<i>Biotechnology and Bioengineering</i> Correspondence and papers. 2 folders. Lilly was involved with the journal as author, reviewer and associate editor.	1969-1997
D.365	<i>Enzyme and Microbial Technology</i> Correspondence <i>re</i> review of manuscript and Board meeting. Lilly was a member of the editorial board.	1991, 1997
D.366	Miscellaneous shorter correspondence	1991-1998

SECTION E	LECTURES, E.1-E.69	1966-1996
E.1	<p>'Periodic changes in amidase synthesis by Pseudomonas aeruginosa in continuous culture', Society for General Microbiology, 27 September 1966</p> <p>Drafts of paper by A.Boddy, P.H. Clarke and Lilly, figures. Also spring term 1967 colloquia list for UCL Faculty of Medical Sciences which lists talk by Lilly on Pseudomonas aeruginosa under the title 'Oscillations in bacterial enzyme synthesis'.</p>	1966-1967
E.2	<p>Untitled talk, Engineering Foundation Research Conference on Enzyme Engineering, Henniker, New Hampshire, USA, 9-13 August 1971</p> <p>Manuscript draft of Lilly's talk beginning 'I would like to spend the first few minutes summarising our work on immobilisation at UCL and then talking about some of our recent work', list of participants, conference information.</p>	1971
E.3	<p>'Immobilised Enzyme Reactors, Fourth International Fermentation Symposium, Kyoto, Japan, March 1972</p> <p>Typescript draft.</p>	1972
E.4	<p>'The Bioengineering of Immobilised Enzymes, Rouen, France, 1972</p> <p>Incomplete manuscript drafts.</p>	1972
E.5	<p>Untitled manuscript fragment of talk on immobilised enzymes, lists of slides and 'definite targets by December 1972'</p> <p>Although found separately the manuscript fragment may relate to papers at E.4</p>	1972
E.6	<p>Untitled manuscript fragment for paper in a session on reactor design, Second Engineering Foundation Research Conference on Enzyme Engineering, Henniker, [New Hampshire], USA, 5-10 August 1973</p>	1973

Lectures, E.1-E.69

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|----------|---|------|
| E.7 | Untitled manuscript notes, list of slides for paper at Foundation for Research Conferences in Chemistry, Second Research Conference on Catalysis, Osaka, Japan, May 1974

Also list of participants and conference schedule. | 1974 |
| E.8 | 'Enzyme Technology - End of the Beginning', Institution of Chemical Engineers Congress on Advances in Enzyme and Membrane Technology, London, 12 May 1977

Manuscript draft of Lilly's paper, conference programme, etc. | 1977 |
| E.9-E.12 | 'Immobilized Enzyme Reactors', First European Congress on Biotechnology', Interlaken, Switzerland, 25-29 September 1978

Typescript draft, photographs, correspondence <i>re</i> lecture, programme, etc.

Four folders.

See also H.14. | 1978 |
| E.13 | 'Developments in Biocatalysis', plenary lecture, Achema Congress, 22 June 1979

Incomplete typescript draft. | 1979 |
| E.14 | 'Applications of immobilized enzymes / cells - a survey', Nordforsks seminar on 'Immobilized enzyme- and cellsystems and their application in analyses and processes', Lund, Sweden, 13-14 May 1980

Manuscript and typescript draft of Lilly's lecture, programme, correspondence <i>re</i> arrangements, demonstration and poster abstracts | 1980 |
| E.15 | 'Two-liquid phase biocatalytic reactors', The Royal Society, London, June 1982

Typescript drafts of lecture and published paper, correspondence <i>re</i> preparation of lecture. | 1982 |

Lectures, E.1-E.69

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|-----------|---|-----------|
| E.16 | 'The Interactions between Fermentation and Protein Recovery' | N.d. |
| | Typescript draft of lecture for unidentified occasion. Undated, latest bibliographical reference 1983. | |
| E.17 | 'Two-liquid Phase Biocatalytic Reactors', Biotechnology Colloquium, Rutgers University, New Jersey, USA, Spring 1984 | 1984 |
| | Transcript of Lilly's 'off the cuff' paper with covering letter, 18 July 1984 | |
| E.18 | 'SERC [Science and Engineering Research Council] Presentation', 6 December 1985 | 1985 |
| | Manuscript notes, transparencies, etc. | |
| E.19 | 'Presentation to Meeting at New Orleans on January 21st 1986' | 1986 |
| | Typescript notes. | |
| E.20 | 'Industrial Use of Biocatalysts for Asymmetric Synthesis', Society of Chemical Industry Fine Chemicals Group Symposium on Asymmetric Synthesis - Prospects for Industry', London, 20 March 1986 | 1986 |
| | Manuscript and typescript draft, list of slides, programme. | |
| E.21-E.22 | 'Biocatalysis', Research and Development Seminar 'The Compleat Catalysis', Unilever House, London, 9 May 1986 | 1986 |
| | Typescript drafts of Lilly's presentation, programme, list of participants, published proceedings. | |
| | Two folders. | |
| E.23-E.27 | 'Biochemical Engineering - Its Contribution to Society', Sixth Sir Harold Hartley Memorial Lecture, Royal Society, London, 20 January 1988 | 1967-1988 |

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Lectures, E.1-E.69

- /... Invitation to deliver lecture, correspondence *re* arrangements and arising, drafts, background material including Lilly's correspondence with Hartley (E.27), etc.
Five folders.
- E.28 'Lecture - Williamsburg' N.d.
Contents of folder so inscribed: typescript draft of lecture headed on first page 'Fermentation'. Undated, latest bibliographical reference, 1988.
- E.29 Two-liquid Phase Biocatalysis: Choice of Phase Ratio' N.d.
Typescript draft of ? lecture for unidentified occasion. Undated, latest bibliographical reference, 1989. See D.268.
- E.30 'Lecture at Tel Aviv (1991)' 1991
Contents of folder so inscribed: manuscript notes on index cards, etc.
Lilly described 'some of our work on the design and operation of two-liquid phase biocatalytic reactors'.
- E.31 Typescript and manuscript lecture notes, faxes, etc 1991-1992
Relates ?to Lilly's keynote lecture at annual IChemE Research meeting, entitled 'Biochemical Engineering Research: its contribution to the biological industries', January 1992. See D.283.
- E.32 'Biotransformations using immobilized biocatalysts', Mosbach Symposium, 2-5 December 1992. 1992
Transparencies etc for Lilly's lecture.
See H.50, H.51.
- E.33 'Advances in biotransformation processes', Dankwerts Lecture, January 1993 1993

Lectures, E.1-E.69

Typescript draft, background papers, correspondence, etc.

See D.298-D.300.

E.34	'Ascona (27.2.94)'	1994
	5pp typescript draft so titled, manuscript list of slides.	
	Lilly talked 'about biochemical engineering to illustrate the crucial part that it has played in many past and present innovations in medicine'.	
E.35-E.38	'The development of biochemical engineering science in Europe', Plenary lecture, 1st European Symposium on Biochemical Engineering Science, Dublin, Ireland, 19 September 1996	1996
	Typescript drafts, slides, figures, etc.	
	Four folders.	
E.39	'Biochemical Engineering'	N.d.
	Contents of folder inscribed 'I Chem E Mtg' - 96? Brighton': illustrative material for lecture including two photographs.	
E.40	'Biochemical Reactors'	N.d.
	Manuscript notes.	
E.41	'Biochemical Reactors'	N.d.
	Manuscript notes.	
	This lecture was delivered to the Biochemical Society at the University of Bath.	
E.42	'The Challenge of the Universities'	N.d.
	Typescript draft.	

Lectures, E.1-E.69

E.43	'The Use of Immobilized Enzymes in Reactors' Typescript draft.	N.d.
E.44-E.58	Untitled lecture notes and drafts Although these notes and drafts lack formal titles the topics are sometimes identified by Lilly in the opening paragraph, for example advances in biotransformation at E.50 and biotechnology at E.51. Fifteen folders.	N.d.
E.59-E.69	Illustrative material for lectures and papers Eleven folders.	N.d.

SECTION F SOCIETIES AND ORGANISATIONS, F.1-F.372 1968-1998

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|--------------|--|
| F.1 | ADVISORY BOARD FOR THE RESEARCH COUNCILS (ABRC) |
| F.2-F.14 | AGRICULTURAL AND FOOD RESEARCH COUNCIL (AFRC) |
| F.15 | BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL (BBSRC) |
| F.16-F.28 | BIOTECHNOLOGY JOINT ADVISORY BOARD (BJAB) |
| F.29 | BIOTRANSFORMATION RESEARCH ADVISORY GROUP (BRAG) |
| F.30-F.36 | COBIOTECH (ICSU INTERNATIONAL SCIENTIFIC COMMITTEE FOR BIOTECHNOLOGY) |
| F.37 | ENGINEERING FOUNDATION |
| F.38-F.132 | EUROPEAN COMMISSION (EC) |
| F.133-F.160A | EUROPEAN FEDERATION OF BIOTECHNOLOGY (EFB) |
| F.161-F.165 | EUROPEAN SCIENCE FOUNDATION (ESF) |
| F.165A | HOUSE OF LORDS SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY |
| F.166-F.271 | INSTITUTE FOR BIOTECHNOLOGY STUDIES (IBS) / INTERNATIONAL INSTITUTE OF BIOTECHNOLOGY (IIB) |
| F.272 | INSTITUTION OF CHEMICAL ENGINEERS |
| F.273-F.295 | INTERNATIONAL ORGANIZATION FOR BIOTECHNOLOGY AND BIOENGINEERING (IOBB) |

Societies and organisations, F.1-F.372

F.295A	LABORATORY OF THE GOVERNMENT CHEMIST (LGC)
F.296-F.322	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
F.323-F.333	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)
F.334-F.341	PUBLIC HEALTH LABORATORY SERVICE (PHLS)
F.342-F.344	ROYAL ACADEMY OF ENGINEERING
F.345-F.352	ROYAL SOCIETY
F.353-F.367	SCIENCE AND ENGINEERING RESEARCH COUNCIL
F.368-F.370	UNIVERSITY OF CAMBRIDGE
F.371, F.372	WOLFSON FOUNDATION

F.1 **ADVISORY BOARD FOR THE RESEARCH COUNCILS (ABRC)** **1992**

Correspondence and papers *re* ABRC Research Opportunities discussion.

Includes a note by Lilly on 'Real Opportunities in Biochemical Engineering'.

F.2-F.14 **AGRICULTURAL AND FOOD RESEARCH COUNCIL (AFRC)** **1991-1993**

Invitation to serve, correspondence and papers *re* meetings.

12 folders and AFRC handbook.

Societies and organisations, F.1-F.372

In December 1991 Lilly was invited to serve as a member of a new Engineering Research Board

F.15 BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL (BBSRC) 1993

'Bioprocessing in the New Biotechnology and Biological Sciences Research Council', discussion paper by Peter Dunnill.

F.16-F.28 BIOTECHNOLOGY JOINT ADVISORY BOARD (BJAB) 1992-1994

Correspondence and papers *re* Board meetings, workshops, etc.

Thirteen folders.

The BJAB was set up in 1989 by the Department of Trade and Industry and the Science and Engineering Research Council. They were subsequently joined as full partners or observers by the other Research Councils. The BJAB's mission was 'to draw research base and industrial practitioners into the development of a strategy to underpin successful industrial innovation and to encourage the funding bodies to implement it'.

Lilly accepted an invitation to serve a member of the BJAB, 1 September 1992 - 31 August 1994.

F.29 BIOTRANSFORMATION RESEARCH ADVISORY GROUP (BRAG) 1996

Agenda for meeting only.

Lilly was a member of the Advisory Group.

Societies and organisations, F.1-F.372

F.30-F.36 **COBIOTECH (ICSU INTERNATIONAL SCIENTIFIC
COMMITTEE FOR BIOTECHNOLOGY)** **1990-1996**

Correspondence and papers *re* meetings, COBIOTECH activities, relations with IOBB (qv), etc.

Seven folders

Papers at F.33, F.34 were found in a file labelled 'Cobiotech Steering Group Meeting 20-21 November 1994, MonteCarlo, Monaco'.

COBIOTECH was established under the auspices of ICSU with the overall goals of promoting biotechnology for the benefit of mankind, of advancing research and education, and of transferring information and resources in the field of technology.

In 1994 Lilly formally accepted nomination to the Steering Group of COBIOTECH.

F.37 **ENGINEERING FOUNDATION** **1993-1997**

Brief correspondence *re* Enzyme Engineering Award Committee.

After receiving the Award himself in 1993, Lilly was appointed to the Award Committee.

F.38-F.132 **EUROPEAN COMMISSION (EC)** **1990-1998**

F.38-F.55 Human Capital and Mobility Programme/European Biochemical Engineering Network (EBEN)

F.56-F.117 Framework IV

F.118-F.122 Framework V

F.123-F.132 Miscellaneous

Societies and organisations, F.1-F.372

F.38-F.55	Human Capital and Mobility Programme / European Biochemical Engineering Network (EBEN)	1991-1997
	<p>The European Biochemical Engineering Network was selected for funding in the European Commission Human Capital and Mobility Programme. The Advanced Centre for Biochemical Engineering, University College London was a participant. It was run by Technische Universitet Delft.</p>	
F.38-F.42	<p>Contents of Lilly's folder divided into five for ease of reference: correspondence and papers <i>re</i> proposal for European network.</p> <p>Lilly's correspondents include Department of Education and Science and European colleagues. Lilly's UCL colleague Peter Dunnill also appears as correspondent.</p>	1992-1993
F.43-F.46	<p>Contents of Lilly's folder divided into four for ease of reference: correspondence and papers <i>re</i> proposal for European network</p> <p>Includes manuscript and typescript drafts for proposal.</p>	1991-1992
F.47-F.54	<p>Miscellaneous correspondence and papers found loose</p> <p>8 folders.</p>	1993-1997
F.55	<p>'Europe - Socrates - Erasmus'</p> <p>Contents of folder so inscribed: correspondence and papers.</p> <p>The first paper in the folder inscribed 'File - EBEN'</p>	1994-1995
F.56-F.117	Framework IV	1991-1998
	<p>Correspondence and papers <i>re</i> biochemical engineering science activity in Framework IV</p> <p>Lilly coordinated European biochemical engineering science in the Framework IV Programme. The biochemical engineering science Framework IV programme encapsulated the concept of biocatalyst-</p>	

Societies and organisations, F.1-F.372

based factory process under the title 'Cell Factory'.

F.56-F.70	Correspondence and papers <i>re</i> biochemical engineering science proposal	1991-1992
	In December 1991 a two-day meeting was held in the UK to discuss the lack of biochemical engineering research in EC Framework III BIOTECH programme. The outcome was a document entitled 'Biochemical Engineering Science - Strategic Case for a Clear Focus in Framework IV' (F.63), which was submitted to the European Commission in January 1992.	
F.56	October 1991	
F.57	November 1991	
F.58	'Bio-Process Research Programme Outline Case for a Clear Focus in Framework IV'	N.d.
	Paper prepared by UK DTI [Department of Trade and Industry] Biotechnology Unit	
F.59-F.63	January 1992	
	Four folders and one bound paper (F.63) 'Biochemical Engineering Science Strategic Case for a Clear Focus in Framework IV January 1992'	
F.64	February 1992	
F.65	March-April 1992	
F.66	May 1992	
F.67, F.68	June 1992	
	Two folders.	

Societies and organisations, F.1-F.372

- F.69 October 1992
- F.70 Photocopies of 1990 correspondence found with papers relating to Framework IV proposal
- F.71-F.77 'Framework IV November 92' 1991-1993
- Contents of folder so inscribed divided into seven for ease of reference: correspondence and papers *re* meeting on Biochemical Engineering Science in Framework IV, Amsterdam, The Netherlands, 9-10 November 1992
- The aim of the meeting was to build on the December 1991 meeting, drawing up recommendations for the scientific content of a Biochemical Engineering Science programme, the recommendations to be submitted to the EC for further consideration.
- F.78-F.87 Correspondence and papers 1993
- F.78 January 1993
- F.79 'Biochemical Engineering Science Proposal for a Research Programme in Framework IV January 1993'
- Bound proposal document.
- F.80 February 1993
- Includes Lilly's suggested form of words for a biochemical engineering science theme under the Life Sciences and Technologies line in the revised draft of Framework IV, conveyed to the European Commission Directorate General for Science, Research and Development by the Department of Trade and Industry.
- F.81 March - May 1993

Societies and organisations, F.1-F.372

F.82 June - July 1993

Includes papers *re* 'Dublin Meeting on BioChemical Priorities', 14 June 1993.

Lilly presented 'The Case for BioChemical Engineering Science in Framework IV'.

F.83 October 1993

F.84, F.85 November 1993

Two folders

At F.84 is a 'copy of the latest Commission text on Life Sciences and Technologies, which is proposed for inclusion in Framework IV', sent to Lilly by the Department of Trade and Industry.

At F.85 is a letter from Lilly, 3 November 1993, to all participants of the Framework IV Biochemical Engineering Group enclosing a note on 'Area No. 1 Biotechnology 1.1 Cell Factories' setting out the 'Objective', 'Implementation' and 'Research tasks'.

On 16 November Lilly and a Dutch colleague Hans Tramper visited Brussels to have further discussions on Biochemical Engineering in Framework IV.

F.86 December 1993

Includes papers *re* IRDAC Round Table on 'Demonstration in Life Sciences', Brussels, 13 December 1993.

F.87 'Report of the IRDAC Round Table on "Demonstration in Life Sciences" Brussels, 13 Dcember 1993'

F.88, F.89 'UCL - Framework IV'

1993-1994

Contents of folder so inscribed divided into two for ease of reference: includes Framework IV proposals, papers for EBEN meetings.

Societies and organisations, F.1-F.372

- | | | |
|-------------|---|-----------|
| F.90-F.96 | <p>Correspondence and papers <i>re</i> Field Review Group on Cell Factories, Framework IV etc.</p> <p>Contents of untitled folder divided into seven for ease of reference: includes papers <i>re</i> first meeting of Group, Brussels, 28 April 1994.</p> | 1994 |
| F.97-F.104 | <p>Correspondence and papers <i>re</i> EBEN meetings, Framework IV etc</p> <p>Includes Framework IV proposals and papers <i>re</i> Framework IV Biotechnology Event (attended by Lilly), The Hague, 26-27 November 1994.</p> <p>Eight folders.</p> <p>These papers were found in considerable disorder.</p> | 1994 |
| F.105-F.117 | <p>Correspondence and papers <i>re</i> Framework IV etc</p> <p>Thirteen folders.</p> <p>Principally <i>re</i> European Cell Factory Conference, Lund, Sweden, 27-30 April 1997.</p> <p>Lilly organised this meeting with B. Hahn-Hagerdal at Lund. He gave the opening lecture. The objective of the conference was to review progress to date in achieving the aims and objectives of the Framework IV Cell Factories Programme.</p> <p>See F.112 for the conference programme and list of participants and F.113 for text of Lilly's lecture. For texts prepared for publication see F.116.</p> | 1995-1998 |
| F.118-F.122 | <p>Framework V</p> <p>Correspondence and papers <i>re</i> Framework V preparation.</p> <p>Five folders.</p> | 1996-1997 |
| F.123-F.132 | <p>Miscellaneous</p> | 1990-1997 |
| F.123 | <p>'European Laboratories Without Walls [ELWW] in the Framework of BPA [Biotechnology Action Programme]</p> | 1990 |

Societies and organisations, F.1-F.372

and BRIDGE'

Contents of folder so labelled: proposals for Council decisions in respect of research and development programmes in agriculture and agro-industry and the life sciences and technologies, carbon of letter from Lilly *re* discussions on Commission's work with biotechnology and booklet on the ELWW.

F.124 'European Social Fund' 1992

Contents of folder so labelled: project description forms, manuscript notes.

F.125-F.127 European Harmonisation' 1993-1997

Contents of folder so labelled divided into three for ease of reference: correspondence and papers *re* European Doctorate in Biotechnology and harmonisation of qualifications in biotechnology.

F.128 'FITB [Flexible and Interactive Training in Biotechnology] Europe' 1995

Contents of folder so inscribed: correspondence and papers.

F.129-F.130 'EC - Grant Evaluation' 1995-1996

Contents of folder so inscribed divided into two for ease of reference: correspondence and papers *re* biotechnology evaluation.

F.131, F.132 'Biotechnology's economic impact in Europe: A survey of its future role in competitiveness' September 1994

Published report of survey undertaken by Ernst & Young and supported by the SAGB (Senior Advisory Group Biotechnology) with invitation to 'Biotechnology - the economic stakes for Europe' meeting, London, 27 September 1994 and Lilly's manuscript notes on back of attendance list.

Two folders.

Societies and organisations, F.1-F.372

F.133-F.160A	EUROPEAN FEDERATION OF BIOTECHNOLOGY (EFB)	1977-1997
F.133-F.136	'Formation of the EFB' Contents of folder so inscribed divided into four for ease of reference: papers 1977-1978 <i>re</i> formation of EFB, Newsletters no.5, September 1982 and no.7, September 1984.	1977-1984
F.137-F.154	EFB Working Party on Immobilized Biocatalysts Correspondence and papers including minutes of meetings. Lilly was a founding member of the Working Party. The inaugural meeting, chaired by P.B. Poulsen, was held in Copenhagen, 19 May 1980	1980-1996
F.137-F.138	1980 Two folders. Includes 'List of delegates and their background in the field', August 1980 (F.138).	
F.139	1981	
F.140-F.141	1982 Two folders. Includes at F.141 'the final approved "Guidelines for the Characterization of Immobilized Biocatalysts".'	
F.142	1983	
F.143-F.144	1984 Two folders.	

Societies and organisations, F.1-F.372

F.145-F.146	1985	
	Two folders.	
F.147	1986	
F.148	1987	
F.149	1991	
F.150-F.151	1992	
	Two folders.	
F.152	1993	
F.153	1994	
	Includes letter from the Managing Editor, <i>Biocatalysis</i> , 23 May 1994, re future developments of the journal.	
F.154-F.154A	1995-1996	
	Two folders.	
	At F.154A are Lilly's manuscript notes and transparencies for meeting or meetings.	
F.155-F.158	'European Federation of Biotechnology EFB'	1992
	Contents of folder so inscribed divided into four for ease of reference: correspondence and papers re workshop with representatives of the European Commission and delegates from the European Federation of Biotechnology, Brussels, 9 April 1992.	
	Includes transparencies for presentation by Lilly at Brussels (F.156) and for presentation at National	

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Academy of Sciences, Washington DC, 18 August 1992
(F.158).

F.159-F.160 'EFB - Biochemical Engineering Science - New Initiative' 1995-1997

Contents of folder so labelled divided into two for ease of reference: correspondence and papers *re* EFB Section on Biochemical Engineering Science.

Lilly was a member of the Board of the Section which met for the first time on 21 September 1996

F.160A 'Manpower and Training Implications of the Expansion of Biotechnology Based Industries' N.d.

The introduction explains that the EFB commissioned in 1979-1980 a workshop charged with studying the problems of education in the member countries and that the present report has been established by experts belonging to the eleven following countries: Germany, France, Greece, Ireland, Italy, the Netherlands, Norway, Poland, Switzerland and the United Kingdom.

Lilly was a member of the working group which produced the report.

F.161-F.165 EUROPEAN SCIENCE FOUNDATION (ESF) 1992-1996

Correspondence and papers *re* ESF Process Integration in Biochemical Engineering Programme.

Five folders.

Lilly was a member of the Programme Steering Committee.

F.165A HOUSE OF LORDS SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY 1993

Lilly was invited to submit written evidence to Sub-Committee II - Regulation of the UK biotechnology

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industry and its global technology.

Includes questions on which evidence was invited and drafts of Lilly's response.

F.166-F.271

**INSTITUTE FOR BIOTECHNOLOGY STUDIES (IBS) /
INTERNATIONAL INSTITUTE OF BIOTECHNOLOGY
(IIB)**

1980-1996

The Institute for Biotechnology Studies was a charitable organisation established in 1983 by the Polytechnic of Central London, University College London and the University of Kent at Canterbury. The aims of the Institute were to promote multidisciplinary developments in biotechnology research and teaching. The management group comprised A.T. Bull University of Kent, G. Holt, Polytechnic of Central London and Lilly, University College London.

The name of the Institute was changed to the International Institute of Biotechnology in 1989.

See also B.17.

F.166-F.174

'Consortium'

1980-1983

Contents of ring binder so labelled: correspondence and papers *re* formation of a biotechnology consortium in the South East of England.

F.166

Principally manuscript notes and drafts found at the front of the binder, 1981-1982, most undated

F.167

November 1980 - January 1981

Includes copy of letter from the Prime Minister, Margaret Thatcher, to Lord Ironside, 20 January 1981.

F.168

June - November 1981

Includes 'A Proposal for the Formation of a Biotechnology Consortium in S.E. England', 2pp typescript.

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- F.169 January - May 1982
- F.170 June 1982
- F.171 July 1982
Includes Trust deed for The Biotechnology Institute and Studies Centre.
- F.172 August-September 1982
- F.173 October 1982 - January 1983
- F.174 N.d.
Includes photocopy of Memorandum and Articles of Association of the Institute for Biotechnological Studies Ltd.
- F.175 'Institute for Biotechnological Studies Trustees Meetings' 1982-1983
Contents of folder so labelled: agenda and minutes of meetings.
- F.176-F.177 'Institute for Biotechnological Studies Trust Management Committee' 1983
Contents of folder so labelled divided into two for ease of reference: agenda and minutes.
- F.178 'DTI [Department of Trade and Industry] Programme Press Release' 1983
Contents of folder so inscribed: includes drafts, list of editors and others to whom press release sent, etc.
The press release was to announce joint research programme with the DTI and a number of industrial companies on developing the use of biocatalysts.

Societies and organisations, F.1-F.372

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|-------------|---|-----------------|
| F.179 | 'PCL [Polytechnic of Central London] Correspondence' | 1983 |
| | Contents of folder so inscribed: includes carbon of Lilly's letter, 4 August 1983, <i>re</i> Inner London Education Authority Review of Advanced Further Education in Inner London. | |
| F.180 | 'Efficiency Case Study I.B.S' | 1984-1986 |
| | Contents of folder so labelled: correspondence and papers <i>re</i> case study on the IBS. | |
| | The case study was undertaken 'to provide practical evidence of how the University's organisational structure aids or hinders the development of an academic initiative'. | |
| F.181 | 'I.B.S. Patenting' | 1985 |
| | Contents of folder so labelled: correspondence and papers <i>re</i> seeking patent protection 'for use of benomyl to obtain unexpectedly improved production of penicillin'. | |
| F.182-F.184 | 'I.B.S. - Biennial Conference' | 1985-1988 |
| | Contents of folder so inscribed divided into three for ease of reference: correspondence and papers <i>re</i> organisation of the first IBS Biennial Conference. | |
| F.185-F.215 | 'Extended use of Biocatalysts Research Grant' | 1982-1989 |
| | Contents of two box files | |
| | This was a joint programme with the Department of Trade and Industry and Industrial Companies: Shell Research Ltd, Unilever Research, May and Baker Ltd, Glaxo Group Research Ltd, Grand Metropolitan Biotechnology, Perkin Elmer and Imperial Chemical Industries. The project, of five years duration, was started in September 1983. | |
| | The programme set out to begin to answer the question as to why microorganisms only synthesise useful products for a limited time and to ascertain whether from an understanding of the reasons for this their useful lives as catalysts can be extended. | |
| F.185-F.193 | General correspondence and papers | 1982-1989, n.d. |

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F.185	October 1982 - March 1983	
F.186	April 1983 - September 1983	
F.187	October 1983 - March 1984	
F.188	April - June 1984	
F.189	July - September 1984	
F.190	October, December 1994	
F.191	January - October 1985	
F.192	1988-1989	
F.193	N.d.	
F.194-F.195	'Institute Department of Trade and Industry Companies Grand Met'	1983-1987
	Contents of folder so inscribed divided into two for ease of reference: principally correspondence between Lilly on behalf of the Institute and Grand Metropolitan Biotechnology Ltd.	
F.196-F.202	Correspondence and papers <i>re</i> Industrial Liaison Meetings	1985-1988
	Papers for each meeting were found in separate folders.	
F.196	3 April 1985	
	Includes transparencies.	

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F.197	11 April 1986	
F.198	3 October 1986	
F.199	27 March 1987	
F.200	2 October 1987	
F.201	25 March 1988	
F.202	25 October 1988	
F.203-F.215	Proposal and reports Bound copies of documents.	N.d., 1983-1989
F.203	Proposal for an industrially-supported research programme With manuscript annotations. Loose copy enclosed, also with manuscript annotations.	N.d.
F.204	'Progress Report for Industrial Liaison Meeting at University College London on Thursday 1 December 1983' With marginal emphasis. Annotated on front cover 'Team Leader's copy'.	1983
F.205	'Progress Report for Industrial Liaison Meeting at University of Kent on Thursday 5 April 1984' Annotated on front cover 'Team Leaders copy'	1984

Societies and organisations, F.1-F.372

F.206	'Progress Report for Industrial Liaison Meeting at Polytechnic of Central London on Wednesday 26 September 1984'	1984
	Annotated on front cover 'Team Leaders copy'.	
F.207	'Progress Report for Industrial Liaison Meeting at Perkin Elmer Limited on Wednesday 3 April 1985'	1985
F.208	'Progress Report for Industrial Liaison Meeting at Glaxo Group Research Limited on Friday 4 October 1985'	1985
F.209	Progress Report for Industrial Liaison Meeting at University College London on Friday 11 April 1986'	1986
F.210	Progress Report for Industrial Liaison Meeting at University College London on Friday 3 October 1986'	1986
F.211	Progress Report for Industrial Liaison Meeting at University of Kent at Canterbury on Friday 27 March 1987'	1987
F.212	'Progress Report for Industrial Liaison Meeting at ICI (London) on Friday 2 October 1987'	1987
F.213	'Progress Report for Industrial Liaison Meeting at University College London on Friday 25 March 1988'	1988
F.214	Progress Report for Industrial Liaison Meeting at Rhone Poulenc Ltd on Tuesday 25 October 1988'	1988
F.215	Final Report of the Institute's 5 year research programme - 1 September 1983 - 31 August 1988	January 1989

Societies and organisations, F.1-F.372

F.216-F.255	General correspondence and papers Includes papers for meetings of Executive Committee and Board of Management.	1986-1996
F.216, F.217	1986-1987 Two folders.	
F.218	1988	
F.219-F.223	1989 Five folders.	
F.224-F.227	1990 Four folders.	
F.228-F.232	1991 Five folders	
F.233-F.237	1992 Five folders.	
F.238-F.241	1993 Four folders.	
F.242-F.249	1994 Eight folders.	
F.250-F.253	1995 Four folders.	

Societies and organisations, F.1-F.372

F.254	1996	
F.255	N.d.	
F.256-F.269	Miscellaneous papers and reports	1983-1994
F.256	Memorandum and Articles of Association	1983
F.257	Printed papers: 'Survey of Activities', July 1985, 'Research Opportunities in Biotechnology', 'Continuing Education in Biotechnology', 'Information & Advisory Service in Biotechnology', etc In original folder.	1985
F.258	'1987 Policy Review' Inscribed on title page 'The Gospel according to David [J. Hardman]!'	1987
F.259	Two papers on the President's Plan for the Future and Institute Development	1989
F.260	Annual General Meeting, 27 September 1990 Bound copy of agenda and papers for meeting.	1990
F.261	'1990 Policy Review'	1990
F.262	Annual General Meeting, 12 March 1991 Bound copy of agenda and papers.	
F.263	'Companies Limited by Shares'	1991

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Paper prepared for the Directors by the Executive Secretary, David J. Hardman as directed at the meeting of the Board on 12 March 1991, 30 July 1991.

F.264	Annual General Meeting, 12 March 1992 Bound copy of agenda and papers.	1992
F.265	Annual General Meeting, 10 March 1993 Bound copy of agenda and papers for meeting	1993
F.266	Annual General Meeting, 6 June 1994 Bound copy of agenda and papers.	1994
F.267	'Principles of Gene Cloning and Analysis' A manual produced by the International Institute of Biotechnology for the COMETT programme (programme on cooperation between enterprises and universities regarding training in the field of technology), author T.A. Brown, UMIST Manchester. Enclosed compliments slip is inscribed 'For circulation to Executive Directors, 26/5/94'.	1994
F.268	'Expression of recombinant genes' A manual produced by the International Institute of Biotechnology for the COMETT programme (programme on cooperation between enterprises and universities regarding training in the field of technology), author M.F. Tuite, University of Kent at Canterbury.	N.d.
F.269	'International Institute of Biotechnology Statement of Objectives'	N.d.
F.270-F.271	Biodiversity Ltd 'Biodiversity Ltd Overlaps with IIB'. Contents of folder so	1991-1992

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inscribed divided into two for ease of reference:
correspondence and papers.

F.272 INSTITUTION OF CHEMICAL ENGINEERS 1991-1994

Miscellaneous correspondence and papers.

See also A.8-A.10.

F.273-F.295 INTERNATIONAL ORGANIZATION FOR BIO- 1968-1997
TECHNOLOGY AND BIOENGINEERING (IOBB)

Correspondence and papers.

In a notice in *Biotechnology and Bioengineering*, 1975 (see F.276) Lilly as chairman explained that the IOBB was a non-profit organisation created in 1968 by Professors C.-G. Heden, I. Malek, G. Terui, H.G. Gyllenberg and E.L. Gaden Jr, and that it had been responsible for various training courses in biotechnology and bioengineering and sponsorship of many international symposia.

UCL biochemical engineering was a member from the late 1960s and Lilly served the IOBB in a number of capacities including a period as chairman. He was elected to the honorary membership of the IOBB in 1996, one of the first two honorary members of the organisation.

F.273 1968-1969

F.274 N.d.

Objectives, statutes etc.

F.275 1972

Programme etc for regional training course on basic research in fermentation technology, Institute of Nutrition, Cairo, 13 November-12 December 1972.

/...

Societies and organisations, F.1-F.372

- /... The IOBB was one of the sponsoring bodies.
- F.276 1975
Includes Statutes, January 1975 and notice on the IOBB written by Lilly, the current chairman, for *Biotechnology and Bioengineering* 17(2) 1975.
- F.277 1976-1979
Includes Newsletters, 1976 and 1977 and correspondence, re dues to the International Union of Pure and Applied Biophysics, 1979.
- F.278 Includes minutes of meeting, 1980 and Newsletters, 1982
- F.279 1983
Newsletters.
- F.280 1984
Includes Newsletters and Statutes.
- F.281 1985
Includes Newsletters.
- F.282 1989
Includes minutes of AGM, July 1988, circulated January 1989.
- F.283 'I.O.B.B. Directory 1989' 1990
List of laboratories registered 1989.

Societies and organisations, F.1-F.372

- F.284-F.285 1990
Two folders.
Principally membership applications.
- F.286 1991
Includes Newsletters and membership application.
- F.287 1992
Includes minutes of IOBB General Assembly, 18 August 1982.
- F.288-F.289 1993
Two folders.
Includes correspondence and papers *re* relations with other international organisations such as ICSU and COBIOTECH.
- F.290-F.293 1994
Four folders.
Correspondence and papers *re* new IOBB Statutes, IOBB Chairmanship, etc.
- F.294 1995
Includes correspondence and papers *re* relations with COBIOTECH.
- F.295 1996-1997
Includes notification of Lilly's election to honorary membership of IOBB, September 1996 and IOBB Newsletter, October 1996.

Societies and organisations, F.1-F.372

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|--------------------|--|------------------|
| F.295A | LABORATORY OF THE GOVERNMENT CHEMIST (LGC) | 1986-1990 |
| | <p>Correspondence and papers <i>re</i> The Biotransformation Club.</p> <p>The Biotransformation Club was operated by the Biotechnology Research Group of the Laboratory of the Government Chemist. The LGC was a research establishment of the Department of Trade and Industry.</p> <p>The rationale of the Club was that biotransformations would effect many sectors of industry and that there was a clear need for these sectors to be aware of the many opportunities that biotransformations could offer. Lilly was a member of the Club on behalf of the UCL Department of Chemical and Biochemical Engineering.</p> | |
| F.296-F.322 | MASSACHUSETTS INSTITUTE OF TECHNOLOGY | 1971-1982 |
| | <p>Principally photocopies of material for Fermentation Technology courses.</p> <p>Lilly was a contributor.</p> <p>See also H.27.</p> | |
| F.296 | Fermentation Technology Course, Massachusetts Institute of Technology, Cambridge, Massachusetts, 23-27 August 1971 | 1971 |
| | <p>'O₂ Transfer in Biological Systems ... by A.E. Humphrey'.</p> | |
| F.297-F.297A | Fermentation Technology Course Massachusetts Institute of Technology, Cambridge Massachusetts, 24-28 July 1972 | 1972 |
| F.297 | 'Topic No. 6 Translation to Different Operating Scales ...
By: A.E. Humphrey' | |
| | <p>The folder also includes title page only for 'Tables and Graphs on Topic No. 5 "Mass Transfer" ... by Daniel C. Wang'.</p> | |

Societies and organisations, F.1-F.372

- F.297A 'Notes, Tables and Graphs on Topic No.11 "Enzyme Isolation" ... by Malcolm Lilly'

Xerox was undated but found with the papers at F.297.
- F.298-F.300 Fermentation Technology Course Massachusetts Institute of Technology, Cambridge Massachusetts, 30 July - 3 August 1973 1973
- F.298 'Tables and Graphs Topic No. 5 Mass Transfer ... By: Daniel I.C. Wang'
- F.299 'Tables and Figures Topic No. 8 Instrumentation and Control ... By: Arthur E. Humphrey'
- F.300 'Tables and Graphs Topic No. 11 Enzyme Science and Technology ... by M.D. Lilly'
- F.301-F.307 Fermentation Technology Industrial Liaison Office Massachusetts Institute of Technology Special European Program, London, 23-27 January 1978 1978

Contents of binder labelled 'M.D. Lilly University College London' divided into seven for ease of reference: list of lecturers, course outlines, daily lecture schedule, lecture materials (tables and figures) and reference materials.

Lecturers include Lilly and his UCL colleague Peter Dunnill.
- F.308-F.322 Fermentation Technology courses, Paris, 15-19 February and MIT, 2-6 August 1982 1981-1982
- F.308-F.317 'Massachusetts Institute of Technology Industrial Liaison Program European Course Fermentation Technology' 1982

Contents of ring binder so titled divided into ten for ease of reference: includes lecturers, course outlines, tables and figures for course topics and reference materials.

Lecturers include Lilly.

Societies and organisations, F.1-F.372

F.318-F.322 Contents of untitled folder divided into five for ease of reference: correspondence *re* arrangements for Fermentation Technology course in Paris, February 1982 and summer course at MIT, August 1982, photocopy, manuscript material, etc for course or courses. 1981-1982

See also H.27.

F.323-F.333 ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) 1981-1985

Correspondence and papers.

In 1981 the OECD commissioned a report on International Trends and Perspectives in Biotechnology from Lilly, A.T. Bull and G. Holt. A draft report was prepared by the end of the year and discussed at a meeting of experts, Paris, 17-18 March 1982. The draft was then modified and completed for submission to OECD member governments and subsequently published.

F.323 January 1981

F.324 June-August 1981

F.325 October-November 1981

F.326-F.327 December 1981

Typescript copy of the draft report.

Two folders.

F.328 January-March 1982

Includes Note by OECD Secretariat 'Summary of meeting on "International Trends and Perspectives in Biotechnology" by A.T. Bull, G. Holt and M.D. Lilly, 17th-18th March, 1982'.

Societies and organisations, F.1-F.372

- F.329-F.330 April 1982
- A duplicated typescript copy of the report submitted to the OECD member governments is at F.329.
- Two folders.
- F.331 May-December 1982
- Includes correspondence and papers *re* meeting of the OECD Committee for Scientific and Technological Policy which considered the report, 28 May 1982.
- F.332 1983-1985
- Correspondence *re* translations of the report into languages other than English, reviews of the published report, etc.
- F.333 N.d.
- Includes manuscript notes and drafts.
- F.334-F.341 **PUBLIC HEALTH LABORATORY SERVICE (PHLS)** **1988-1998**
- In July 1988 Lilly was invited on behalf of the Secretary of State for the Department of Health and Social Security to serve as a member of the Public Health Laboratory Service Board. In 1993 the PHLS Board established a Research and Scientific Strategy Committee (RSSC) to be responsible for developing its R&D policy and broad strategy and for setting up a mechanism for the assessment of R&D at the project level. Lilly was invited to join this new Committee and serve as a member of a small Strategic Review Group under an independent Chairman.
- Lilly's initial appointment to the Board was for three years from 1 August 1988. This was renewed for a further three years to 31 July 1994. After that date he continued as a member of the RSSC until 1998 when he resigned for health reasons.

Societies and organisations, F.1-F.372

F.334-F.335	Correspondence and papers <i>re</i> invitations to serve on Board, RRSC, Strategic Review Group, thanks for service, letter of resignation, etc. Two folders.	1988-1998
F.336-F.341	PHLS Research and Scientific Strategy Committee (RSSC) Committee papers. Some with manuscript annotation by Lilly.	1995-1997
F.336	RSSC meeting, 27 September 1995 Bound copy of agenda and committee papers.	1995
F.337	RSSC meeting, 16 February 1996 Agenda and committee papers.	1996
F.338	RSSC meeting, 18 April 1996 Agenda, paper and minutes.	1996
F.339	'RSSC 96/17 Preliminary Analysis of PHLS R&D Activity'	1996
F.340-F.341	RSSC meeting, 11 April 1997 Agenda and committee papers. Two folders.	
F.342-F.344	ROYAL ACADEMY OF ENGINEERING	1991-1998
F.342-F.343	Correspondence and papers <i>re</i> public awareness of science and engineering, industrial secondment scheme	1991-1998

Societies and organisations, F.1-F.372

and membership policy

Two folders.

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|--------------------|--|------------------|
| F.344 | Royal Academy of Engineering Evidence to the House of Lords Select Committee on Science and Technology: Sub-Committee II on Regulation of the UK biotechnology industry and global competitiveness

Lilly and his UCL colleague Peter Dunnill were contributors to the evidence. | N.d. |
| F.345-F.352 | ROYAL SOCIETY | 1980-1982 |
| F.345-F.348 | 'Roy. Soc. Report 1981'

Contents of folder so inscribed divided into four for ease of reference: correspondence and papers <i>re</i> preparation of report on Biotechnology and Education by the Royal Society Education Committee Biotechnology Working Group.

Lilly was a member of the Working Group. | 1981 |
| F.349-F.351 | 'Roy Soc / House of Commons 1981/82'

Contents of folder so inscribed divided into three for ease of reference: correspondence and papers <i>re</i> Royal Society and House of Commons Education, Science and Arts Committee inquiry into biotechnology.

Lilly was a member of the Royal Society group giving oral evidence to the Select Committee. The brief for the group is at F.350. At F.351 is typescript by Lilly titled 'A Summary of Higher Education for Biotechnology in the United Kingdom', January 1982. | 1980-1982 |
| F.352 | Miscellaneous correspondence and papers | 1981 |

Societies and organisations, F.1-F.372

F.353-F.367	SCIENCE AND ENGINEERING RESEARCH COUNCIL	1984-1996
F.353, F.354	Papers <i>re</i> meetings of Biotechnology Directorate Microbial Physiology Group 2 folders.	1984, 1986
F.355-F.359	'SERC' Contents of folder so labelled divided into five for ease of reference: correspondence and papers <i>re</i> Biotechnology Directorate, Engineering Research Board, establishment of new Biotechnology and Biological Sciences Research Council, etc. For Lilly's comments on the SERC programme in biotechnology see F.357.	1987-1993
F.360-F.361	'SERC Engineering Board Strategy Advisory Panel' Contents of folder so inscribed divided into two for ease of reference: correspondence and papers <i>re</i> Lilly's membership of the Strategy Advisory Group, meetings, etc.	1992-1994
F.362-F.367	Biochemical Engineering Link Programme Correspondence and papers <i>re</i> management committee meetings, assessment of programme etc. Five folders and bound volume The programme aimed at encouraging firms to work jointly with universities and polytechnics on pre-competitive research relevant to industrial needs. Lilly was both a grant holder and a member of the programme's management committee. For papers <i>re</i> UCL participation in the programme see C.236-C.304, C.930-C.941.	1988-1996

Societies and organisations, F.1-F.372

F.368-F.370 UNIVERSITY OF CAMBRIDGE 1990-1996

Correspondence and papers *re* Review Committee for the
Institute of Biotechnology and Appointments Committee
for the Director of Biotechnology.

Two folders and bound volume.

Lilly was a member of the Review Committee.

F.371-F.372 WOLFSON FOUNDATION 1994

Correspondence and papers *re* Wolfson Laboratory
Renovation, Modernisation & Equipment Programme.

Two folders.

SECTION G

CONSULTANCIES, G.1-G.157

1968-1997

On occasions Lilly consulted in partnership with his UCL colleague Peter Dunnill as Biotech Consultants. For the beginning of the partnership see G.141.

G.1	ALLIED BREWERIES (UK) LTD
G.2-G.4	APCEL LTD
G.5-G.18	BECKMAN INSTRUMENTS INC.
G.19-G.33	BEECHAM GROUP LTD/SMITHKLINE BEECHAM
G.34-G.37	BRITISH GAS PLC
G.38-G.42	CELLTECH LTD
G.43-G.59	ELI LILLY AND COMPANY
G.60	GLAXO GROUP RESEARCH LTD
G.61-G.82	HERCULES LTD
G.83-G.84	HUMPHREYS & GLASGOW LTD
G.85	MAY & BAKER LTD
G.86-G.127	MERCK SHARP & DOHME RESEARCH LABORATORIES
G.127A	NOVO INDUSTRI A/S
G.128	PFIZER INC.
G.129	RHONE-POULENC
G.130	R.T.Z. CHEMICAL LTD

Consultancies, G.1-G.157

G.131	TATE & LYLE INDUSTRIES LTD
G.132-G.139	UNILEVER LTD
G.140	UOP INC.
G.141-G.156	WHATMAN BIOCHEMICALS LTD
G.157	W.R. GRACE LTD

G.1	ALLIED BREWERIES (UK) LTD	1981
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Correspondence and papers *re* advice on commercial opportunities in biotechnology.

G.2-G.4	APCEL LTD	1985-1987
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Correspondence and papers *re* tryptophan project including consultancy agreements, notes of meetings and company brochures.

Three folders.

G.5-G.18	BECKMAN INSTRUMENTS INC.	1974-1980
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G.5-G.6	'Beckman Consulting' and 'Beckman Microbics'	1974-1979
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Contents of folder so inscribed divided into two for ease of reference: correspondence and papers including consultancy agreement, arrangements to visit USA, patent, etc.

Consultancies, G.1-G.157

G.7-G.8	'Beckman (USA)' Contents of folder so inscribed divided into two for ease of reference: correspondence and papers including consultancy agreements, arrangements for visits and papers arising, etc.	1975-1980
G.9-G.18	Enzymic Conversion of Steroids PD & MDL - Provisional Specification Patent Feb. 1975' Contents of folder so labelled with manuscript inscription '(See also Beckman correspondence file)' divided into ten for ease of reference: correspondence and papers <i>re</i> patent including specifications. Correspondents include National Research Development Corporation, Fitzpatricks Chartered Patent Agents and Beckman Instruments Inc. Fitzpatricks acted for Beckman Instruments in the UK.	1974-1978
G.19-G.33	BEECHAM GROUP LTD/SMITHKLINE BEECHAM	1969-1992
G.19-G.24	'Beecham' and 'Penicillin Acylase (Case Project)' Contents of folder so inscribed divided into six for ease of reference: correspondence and papers including notes of meetings.	1969-1980
G.25-G.33	General correspondence and papers <i>re</i> advisory agreements, patent questions etc The papers were found in considerable disorder and the presentation of the significant amount of undated material is tentative. Nine folders.	1972-1992
G.34-G.37	BRITISH GAS PLC Correspondence and papers including reports on visits, note on biotechnology and British Gas, etc.	1982-1994

Consultancies, G.1-G.157

Four folders.

Lilly was invited to join the Research Committee in 1982, serving until 1994.

G.38-G.42 CELLTECH LTD 1987-1990

Correspondence and papers including consultancy agreements, notes of meetings, technical drawings.

Five folders.

G.43-G.59 ELI LILLY AND COMPANY 1987-1997

In 1992 Lilly agreed to serve as a consultant in the areas of fermentation development, biocatalysis and purification for biosynthetic processes.

Lilly visited research centres in the UK and USA.

G.43-G.49 General correspondence and papers including consulting agreement, itineraries, notes and background papers for visits. 1987-1997

Seven folders.

G.50-G.54 'Eli Lilly' 1990-1993

Contents of folder so inscribed divided into five for ease of reference: background papers for meetings.

G.55-G.59 Contents of untitled folder divided into five for ease of reference: correspondence, manuscript notes and background papers for meetings. 1993-1995

Consultancies, G.1-G.157

G.60	GLAXO GROUP RESEARCH LTD	1981-1982
	Correspondence, consultancy agreement, notes of discussion etc.	
G.61-G.82	HERCULES LTD	1988-1991
	Contents of two box folders labelled 'Hercules'. The papers relate to research agreement between Hercules Ltd and the Institute for Biotechnological Studies / International Institute of Biotechnology Ltd, University of Kent at Canterbury, in the area of the biodegradation of chemicals. Lilly was a member of the management group.	
G.61-G.66	General correspondence and papers including research agreement, reports on meetings, 'monthly highlights', etc. These papers were found loose in the box. Six folders.	1988-1991
G.67	'Hercules' Contents of folder so inscribed: includes Hercules proposal revised June 1989	1989-1991
G.68-G.70	'Hercules' Contents of folder so inscribed divided into three for ease of reference: background papers, manuscript notes etc.	1989
G.71	'University of Kent (Hercules)' Contents of folder so inscribed: includes letter <i>re</i> 'Hercules Phase III Consultancy'	1991

Consultancies, G.1-G.157

G.72-G.82	Biogradation of Chemicals Progress Reports	1989-1991
G.72	'1.2.89 - 30.4.89'	
G.73	'1.5.89 - 31.7.89'	
G.74	'1st August 1989 - 31st October 1989'	
G.75	'1st November 1989 to 31st January 1990'	
G.76	'1st February - 30th April 1990'	
G.77	'1st May 1990 to 31st July 1990'	
G.78	'1st August 1990 to 31st October 1990'	
G.79	'1st January to 31st March 1991'	
G.80	'1st April to 30th June 1991'	
G.81	'1st July to 30th September 1991'	
G.82	'1st October to 31st December 1991'	
G.83-G.84	HUMPHREYS & GLASGOW LTD	1978-1980

Correspondence and papers including consultancy agreement, notes of meetings, etc.

Consultancies, G.1-G.157

Two folders

Lilly worked together with his UCL colleague Peter Dunnill as Biotech Consultants.

G.85

MAY & BAKER LTD

1977

One letter only *re* visit.

G.86-G.127

**MERCK SHARP & DOHME RESEARCH
LABORATORIES**

1985-1994

Although the papers principally relate to consultancy there is a little material at G.127 *re* proposal for support for biochemical engineering at UCL.

G.86-G.101

General correspondence and papers including consultancy agreements, reports on visits, etc.

1985-1991

Sixteen folders.

The assignment of undated material within the sequence is tentative.

G.102-G.104

'Merck'

1986-1988

Contents of folder so inscribed divided into three for ease of reference: includes paper sent to Lilly for information.

G.105-G.108

'Merck'

1987-1990

Contents of folder so inscribed divided into four for ease of reference: includes papers sent for information, background papers for meetings.

G.109-G.112

'Merck'

1987, 1990

Contents of folder so inscribed divided into four for ease of

Consultancies, G.1-G.157

of reference: includes papers sent for information, draft paper by Lilly and colleagues at Merck.

G.113	'Dr Lilly'	N.d.
	Contents of a US format folder: ?papers made available to Lilly during visit to Merck.	
G.114-G.126	'Merck Patent Problem Litigation'	1987-1989
	Contents of box folder so inscribed divided into thirteen for ease of reference.	
	These papers were found in considerable disorder and the presentation of undated material is tentative.	
	Lilly's correspondence is with the lawyers Simmons & Simmons.	
G.127	Correspondence and papers <i>re</i> proposal for support from Merck for academic development in biochemical engineering at UCL, etc	1990-1994
G.127A	NOVO INDUSTRI A/S	1972
	Papers <i>re</i> patent case.	
G.128	PFIZER INC.	1992
	One letter only.	
G.129	RHONE-POULENC	1988-1989
	Correspondence and papers <i>re</i> patent litigation.	

Consultancies, G.1-G.157

G.130	R.T.Z. CHEMICAL LTD	1981-1982
	Correspondence and papers <i>re</i> advice in respect of the research and development capability of John & E. Sturge Ltd in the field of enzyme technology.	
G.131	TATE & LYLE INDUSTRIES LTD	1986
	Patent application and confidentiality undertaking.	
G.132-G.139	UNILEVER LTD	1978-1989
	Correspondence and papers including consultancy agreements, notes of meetings, etc.	
	Eight folders.	
	Correspondence and papers at G.139 relate to patent litigation.	
	Lilly's UCL colleague Peter Dunnill also acted as a consultant.	
G.140	UOP INC.	1979
	Principally <i>re</i> consultancy agreement between UOP Process Division and Biotech Consultants (Lilly and his UCL colleague Peter Dunnill).	
G.141-G.156	WHATMAN BIOCHEMICALS LTD	1968-1975
G.141-G.144	'MDL & PD Biotech Consultants' and 'Basically Whatmans Consultancy and Start Up with Roberts, McLennan'	1968-1975

Consultancies, G.1-G.157

Contents of folder so inscribed divided into four for ease of reference: correspondence and papers including setting up of Biotech consultants, consultancy agreements, etc.

Correspondents include chartered accountants Roberts, McLennan & Co.

G.145-G.153 'Whatman Board' 1968-1971

Contents of folder so inscribed divided into nine for ease of reference: correspondence and papers including minutes of meetings, reports and financial papers.

Lilly was a member of the board of the new company. He submitted his resignation in May 1971.

G.154-G.156 'Whatman Biochemicals - Technical Consult' 1969-1970

Contents of folder so inscribed divided into three for ease of reference: correspondence and papers.

Much of the correspondence is between Whatman and P. Dunnill.

G.157 **W.R. GRACE LTD** 1981-1982

Correspondence and papers including report by Lilly on visit: 'Some thoughts on biotechnology activities'.

SECTION H	VISITS AND CONFERENCES, H.1-H.76	1964-1998
H.1	<p>Society of Chemical Industry 2nd International Fermentation Symposium, London, 13-17 April 1964</p> <p>Abstracts of papers and list of participants.</p>	1964
H.2	<p>Chemical Society Symposium on Catalysis by Macromolecules, Liverpool, 21 November 1973</p> <p>Two versions of programme with different titles for Lilly's paper. The titles in the programmes are 'Industrial Scale Isolation of Enzymes' and 'Enzymes as Industrial Catalysts'. The former is crossed out and replaced in pencil with 'Enzymes in industrial reactors.'</p>	1973
H.3	<p>Foundation for Research Conferences in Chemistry Second Research Conference on Catalysis, Osaka, Japan, May 1974</p> <p>Schedule, abstracts and list of participants.</p> <p>Lilly spoke on 'The Use of Immobilized Enzymes as Catalysts'.</p>	1974
H.4	<p>GIM 74 Genetics of Industrial Microorganisms Second International Symposium, Sheffield, 25-31 August 1974</p> <p>Second circular and registration form, lists of authors with the titles of their papers.</p>	1974
H.5	<p>Weizmann Centenary Meeting 'Large Scale Fermentations for Organic Solvents', Manchester, 4 December 1974</p> <p>Programme and list of participants.</p>	1974
H.6	<p>International Symposium on Analysis and Control of Immobilized Enzyme Systems, Compiègne, France, 5-7 May 1975</p> <p>Programme and list of participants</p>	1975

Visits and conferences, H.1-H.76

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| H.7 | Third International Conference on Enzyme Engineering, Reed College, Portland, Oregon, 3-8 August 1975

Programme | 1975 |
| H.8-H.9 | Table Ronde Roussel UCLAF on Polymer Bound Molecules, Paris, 4-5 March 1976

Lilly gave a paper on 'The use of immobilized enzymes in reactors' | 1976 |
| H.8 | List of participants; information about Tables Rondes Roussel UCLAF | |
| H.9 | Bound volume comprising programme and abstracts. | |
| H.10-H.11 | Conference on the Biotechnical Applications of Proteins and Enzymes on the occasion of the sixtieth birthday of President Ephraim Katzir, Kibbutz Kiryat Anavim, Israel, 23-28 May 1976

Abstracts, programme, lists of participants, Lilly's manuscript notes on proceedings.

Two folders.

Lilly gave a paper on 'A Comparison of Cells and Enzymes as Industrial Catalysts'. | 1976 |
| H.12 | Society of Chemical Industry meeting on 'Process control and instrumentation in Fermentation', 13 January 1977

Lilly's manuscript notes on proceedings. | 1977 |
| H.13 | Biochemical and Chemical Societies of the GDR Symposium on 'Isolation and Application of Enzymes in Food Technology and Analytics, Karl-Marx-Stadt, German Democratic Republic, 3-5 November 1977

Invitation to symposium and first announcement only of 12th FEBS Meeting, Dresden, German Democratic Republic, 2-8 July 1978. | 1977-1978 |

Visits and conferences, H.1-H.76

- H.14 International Union for Pure and Applied Biophysics Sixth International Biophysics Congress, Kyoto, Japan, 3-9 September 1978 1978
Third Circular only.
- H.15 First European Congress on Biotechnology, Interlaken, Switzerland, 25-30 September 1978 1977-1978
Press release, announcement and call for papers, list of participants.
- H.16 Advanced Training Course on Biochemical and Microbiological Technology, University of Lagos, Nigeria, 19-30 October 1978 1978
Bound volume of programme and papers.
An acknowledgement explains that the course was originally planned for January 1978 and was the result of discussions between Lilly, as President of the IOBB and the Division of Basic Science of UNESCO. When the course had to be postponed to October Lilly was obliged to resign as international organiser and teacher.
For IOBB see F.273-F.295.
- H.17 The Institution of Chemical Engineers Sixth Annual Meeting on Particle Growth Processes, University College London, 4-6 April 1979 1979
This meeting was organised by Lilly and his UCL colleague Peter Dunnill.
- H.18 International CNRS Symposium on Immobilized Enzymes, Organelles and Cells: Biochemical and Physico-Chemical Aspects', 23-26 July 1979, Compiègne, France 1979
Programme and abstracts.
Lilly was a member of the organizing committee and chaired a session on kinetic properties of immobilized enzyme systems.

Visits and conferences, H.1-H.76

- H.19 Visit to the Federal Republic of Germany of a group of British research scientists including Lilly, 19-28 September 1979 1979
- Programmes of visit in English and Germany, letter from secretary of Joint Working Party on Biotechnology, 7 September 1979, thanking Lilly for meeting the working party and agreeing to report to it on his German visit.
- H.20 13th International TNO Conference on 'Biotechnology - a Hidden Past, a Shining Future', Rotterdam, The Netherlands, 27-28 March 1980 1980
- Programme booklet.
- H.21 Conference on Immobilized enzymes and cells and their application in analyses and processes, Lund, Sweden, 13-14 May 1980 1980
- Lilly's manuscript notes on proceedings.
- H.22 Second European Congress of Biotechnology, Eastbourne, 5-10 April 1981 1981
- Programme booklet.
- Lilly was a member of the Scientific Committee and gave a paper on 'Multi-Phase Enzymic Catalysis'.
- H.23-H.25 First Engineering Foundation Congress on 'Advances in Fermentation Recovery Process Technology', Banff, Alberta, Canada, 7-12 June 1981 1980-1981
- Correspondence *re* arrangements, list of lecturers, programme, abstracts, general information and Lilly's manuscripts notes on proceedings.
- Three folders.
- Lilly co-chaired a session on 'Recovery of Intracellular Products'.
- H.26 Third International Conference on Computer Applications in Fermentation Technology', Manchester, 31 August - 3 September 1981 1981

Visits and conferences, H.1-H.76

Abstracts with manuscript notes by Lilly.

- H.27 Summer Course on Fermentation Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA, 2-6 August 1982 1982
- Correspondence and papers *re* arrangements.
- See also F.308-F.322.
- H.28 'Immobilised Cells in Biotechnology', the Polytechnic of Central London, 27-28 January 1983
- Bound volume comprising programme and papers.
- Lilly spoke on Reactor design and operation.
- H.29 Prime Minister's Seminar on Science, Technology and Industry, Lancaster House, St James's, London, 12 September 1983 1983
- Information, Lilly's manuscript notes of proceedings.
- H.30 Colloquium on Biotechnology: Current Aspects, Rutgers University, New Jersey, USA, 3 April 1984 1984
- Programme in the form of a poster advertising the colloquium.
- Lilly spoke on 'Two-liquid phase biocatalytic reactors'.
- H.31 Anglo-Japanese Workshop in Biotechnology, The Royal Society, London, 2 and 3 May 1984 1984
- Programme, abstracts with Lilly's manuscript notes of proceedings on verso.
- H.32 'Current Trends in Production and Use of Microbial Enzymes', Novo Industri A/S, Bagsvaerd, Denmark, 10 and 11 May 1984 1984
- Programme, list of participants, Lilly's manuscript notes of

Visits and conferences, H.1-H.76

proceedings.

Lilly gave a paper on 'Two-liquid Phase Biocatalytic Reactors'.

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|------------|---|------|
| H.33, H.34 | Third European Congress on Biotechnology, Munich, West Germany, 20 August-4 September 1984 | 1984 |
| | List and supplementary list of participants. | |
| | Two folders. | |
| H.35 | 'Development of Second Generation Bioreactors for the Agro-Food Industries', Braunschweig, West Germany, 7-9 November 1984 | 1984 |
| | Bound volume comprising programme, papers etc. | |
| | The meeting was held under the auspices of the Commission of the European Communities Biomolecular Engineering Programme. | |
| H.36 | 'Biotechnology looks to the next decade', New Orleans, USA, 20-22 January 1986 | 1986 |
| | Programme, Lilly's manuscript notes of proceedings. | |
| | Lilly was co-chairman of a Seminar on Scale-up. | |
| H.37 | 'Biocatalysis in Organic Synthesis - Opportunities for Research and Industry', Society of Chemical Industry Symposium, London, 19 June 1986 | 1986 |
| | Programme, abstracts. | |
| | Lilly and UCL colleague Peter Dunnill gave a paper on 'Biocatalytic Reactions Involving Water-Soluble Organic Compounds'. | |
| H.37A | Workshop on Microbial Production of Cis-Glycols, Warwick, 5-6 June 1986 | 1986 |
| | Invitation, programmes, Lilly's manuscript notes, etc. | |

Visits and conferences, H.1-H.76

- H.38 Seventh Australian Biotechnology Conference, University
of Melbourne, Victoria, Australia, 25-28 August 1986 1986
- Programme and registration form, list of overseas
participants.
- Lilly gave a paper on 'Lysine production by immobilized
cells'.
- H.39-H.40 Eighth International Biotechnology Symposium, Paris,
France, 17-22 July 1988 1987-1988
- Correspondence *re* arrangements, programme, lists of
participants, etc.
- Two folders.
- Lilly participated in a Round-table on Education.
- H.41 Quest International Symposium on 'Biotechnology
Challenges for the Flavor and Food Industry',
Williamsburg, Virginia, USA, 2-5 October 1988 1988
- Correspondence *re* arrangements, programme booklet.
- Lilly gave a paper on 'Biochemical Engineering for Flavor
and Food Production'
- H.42 'Opportunities in Biotransformations, Society of Chemical
Industry Symposium, Churchill College, Cambridge, 3-5
April 1990 1990
- Programme only.
- Lilly and J. Woodley gave a paper on 'Biotransformations
of poorly water-soluble organic compounds'.
- H.43 Anglo-Israeli Meeting on Enzyme Technology and
Biotransformations, Pembroke College, Cambridge, 25-27
March 1991 1991
- Programme with Lilly's manuscript notes on verso.
- Lilly gave a paper on 'The design of bioreactors for two
liquid phase biotransformations', Pembroke College,
Cambridge, 25-27 March 1991

Visits and conferences, H.1-H.76

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| H.44-H.46 | <p>NATO Advanced Study Institute on 'Recent Advances in Industrial Applications of Biotechnology, Kusadasi, Turkey, 16-27 September 1991</p> <p>Correspondence <i>re</i> arrangements and arising, lists of participants and lecturers, general information, Lilly's report to British Council, typescript of Lilly's paper, etc.</p> <p>Three folders.</p> <p>Lilly lectured on 'The Design and Operation of Biotransformation Processes'. The meeting was organised by former PhD student of Lilly, F. Vardar-Sukan.</p> | 1990-1992 |
| H.47 | <p>Invitations declined</p> | 1991-1992 |
| H.48 | <p>'British Engineering Since the War', Institute of Contemporary British History Conference, Science Museum, London, 27-28 June 1992</p> <p>Letter from organiser, programme, abstracts etc.</p> <p>Lilly gave a paper on biotechnology.</p> | 1992 |
| H.49 | <p>Ninth International Biotechnology Symposium and Exposition 'Harnessing Biotechnology for the 21st Century, Crystal City, Virginia USA, 16-21 August 1992</p> <p>Final programme etc.</p> | 1992 |
| H.50-H.51 | <p>Mosbach Symposium on Biochemical Technology, Lund, Sweden, 2-5 December 1992</p> <p>Abstracts, etc.</p> <p>Two folders.</p> <p>Lilly gave a paper on 'Biotransformations using immobilised biocatalysts'.</p> | 1992 |
| H.52-H.59 | <p>'Turkey'</p> <p>Contents of folder so inscribed divided into eight for ease</p> | 1992-1995 |

Visits and conferences, H.1-H.76

of reference: correspondence and papers.

Includes correspondence arising from 1991 NATO Advanced Study Institute (H.44-H.46), and *re* collaboration between International Institute of Biotechnology (UK) with Ege University, Izmir, Turkey, the Biotech-Enzyme network of the Med-Campus programme of the European Commission (coordinated in Turkey), international courses held in Turkey in which Lilly participated, etc.

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| H.59A | <p>'Visit to TAU [Tel-Aviv University] 1993'</p> <p>Papers <i>re</i> visit in connection with joint UCL / Tel-Aviv University research project in biotechnology.</p> <p>Includes programme for Joint Advanced Course on Biochemical Engineering and Biotechnology, Tel-Aviv University, 19-20 May 1993.</p> <p>Lilly gave a paper on 'Engineering Aspects of Fermentation'.</p> <p>For UCL/Tel Aviv University collaboration see C.955-C.963A.</p> | 1993 |
| H.60 | <p>Med Campus Course 'Application of Biotechnologies in Food and Chemical Industries', Ege University Biotechnology Centre, Izmir, Turkey, 6-10 September 1993</p> <p>Bound volume of lecture notes. Manuscript notes by Lilly are enclosed between pp218 and 219.</p> <p>Lilly lectured on 'Design and Operation of Biotransformations for Chemical Synthesis'.</p> | 1993 |
| H.61-H.63 | <p>Engineering Foundation Conference Recombinant DNA Biotechnology III The Integration of Biological and Engineering Sciences, Deauville, France, 26-21 October 1994</p> <p>Correspondence <i>re</i> arrangements, programme, abstracts, typescript of Lilly's paper.</p> <p>Three folders.</p> <p>A paper by Lilly and colleagues was given on 'The Impact of rDNA Technology on Enzymic Carbon-carbon Bond Synthesis'.</p> | 1994 |

Visits and conferences, H.1-H.76

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| H.64-H.66 | <p>Med Campus Programme, Turkey, 1995</p> <p>Contents of untitled folder divided into three for ease of reference: correspondence and papers <i>re</i> this European Commission programme Project Biotech-Enzyme. Includes correspondence <i>re</i> international meetings in Turkey in which Lilly participated.</p> | 1994-1995 |
| H.67-H.70 | <p>International Symposium on 'Selectivity in Basic and Applied Organic Chemistry', Jerusalem, Israel, 27-31 August 1995</p> <p>Correspondence <i>re</i> arrangements, poster, programme and abstracts, etc.</p> <p>Four folders.</p> <p>Lilly gave a plenary lecture on 'Carbon-carbon bond synthesis: preparation and use of transketolase'.</p> | 1995 |
| H.71 | <p>'Recent Advances in Fermentation Technology', Society of Industrial Microbiology Conference, San Diego, California, USA, 4-7 November 1995</p> <p>Programme, manuscript notes of proceedings.</p> | 1995 |
| H.72 | <p>'Industrial Biocatalysis: Making it Happen', InBio '96 Conference and Exhibition', UMIST, Manchester, 20-21 February 1996</p> <p>Programme etc.</p> | 1996 |
| H.73-H.74 | <p>Tenth International Biotechnology Congress, Sydney, Australia, 25-30 August 1996</p> <p>Correspondence <i>re</i> arrangements, programmes, etc.</p> <p>Two folders</p> <p>Lilly agreed to be co-chair of a symposium on integrated bioprocessors with B. Buckland. In the end uncertainty about his health prevented him from travelling to Sydney.</p> | 1994-1996 |

Visits and conferences, H.1-H.76

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|------|---|-----------|
| H.75 | European Cell Factory Conference, Lund, Sweden, 27-30 April 1997 | 1997 |
| | Book of abstracts. | |
| | Lilly was an organiser of the meeting. | |
| H.76 | Shorter correspondence and papers <i>re</i> conferences | 1997-1998 |
| | Includes call for papers for Second European Symposium on Biochemical Engineering Science, Porto, Portugal, 16-19 September 1998. | |
| | Lilly was hoping to attend this meeting but died in May that year. | |

SECTION J CORRESPONDENCE, J.1-J.22 1966-1998

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