



THE LIVER GROUP
ANNUAL REPORT AND ACCOUNTS
FOR THE YEAR ENDED 31 DECEMBER 2004

Charity Registration Number 1024533

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THE LIVER GROUP
TRUSTEES REPORT
IN RESPECT OF THE ACCOUNTS
FOR THE YEAR ENDING 31 DECEMBER 2004

Legal and administrative information

Patron: The Rt. Hon. Baron Bingham of Cornhill, KG PC.
Senior Law Lord

Trustees: Jeff Faulkner FCCA
Kay Glendinning MBE
Prof Humphrey Hodgson FRCP, F Med Sci
Prof David Kerr CBE
Prof Sir Roger Penrose OM FRS
Clare Selden PhD

Principal office: The Liver Group
Centre for Hepatology
Department of Medicine
Royal Free Campus
Royal Free and University College Medical School
Rowland Hill Street
Hampstead
London
NW3 2PF

Charity registration number: 1024533

Web address www.ucl.ac.uk/livergroup

Email address c/o c.selden@medsch.ucl.ac.uk

Tel no: 0207 433 2854

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Bankers: HSBC
Oxford Circus Branch
196 Oxford Street
London
W1A 1EZ

Auditors: Beever and Struthers
Chartered Accountants
Alperton House
Bridgewater Road
Wembley
Middlesex HA0 1EH

Generally, the charity is established for the relief of patients suffering from disease of, and genetic defects affecting, the liver and the promotion of research into the causes and treatment of diseases of the liver.

THE LIVER GROUP
CHAIRMAN'S REPORT
IN RESPECT OF THE ACCOUNTS
FOR THE YEAR ENDING 31 DECEMBER 2004

We are pleased to report on another year's research, pursuing our aim to improve the treatment of liver disease through understanding and harnessing the natural biology of liver cells.

Last year this report highlighted our developments of the key component of a bio-artificial liver – the compact collection of living cells, the hepatocytes, the factory cells of the liver, growing in a tiny spherical capsule. This system, which we developed, provides important advances over previous approaches to providing the living cell component of an artificial liver. This year I would like to highlight the essential, parallel work we are pursuing – providing an environment in which those cells can grow, and then be applied to treat a patient with liver disease. This takes us into the field of bio-reactors.

We are using two types of bio-reactors. In the first, we need to be able to culture the spherical alginate beads in which a few hepatocytes have been seeded, to allow their number to increase up to the hundreds of billions that will be needed for treatment. We have utilised the 'zero-gravity' bioreactors, which by slowly rotating a chamber containing cells simulates the weightlessness of outer space, and significantly alters the stresses on cells and the ability of nutrient molecules to move in and out of the capsules containing the growing cells. We find that the growth rate and the cell density (the number of cell per bead) increase much more rapidly than in conventional culture conditions, and are now developing techniques to use this in practice.

The second bioreactor stage requires the design of the chamber in which cells will be when blood plasma from a sick patient is passed over them. Here we have started a collaboration with a group of bioengineers in France, who have extensive experience with 'fluidised-bed' reactors, and we are entering an exciting phase that combines mathematical modelling with practical design of bioreactors; we have completed the work in small prototypes and are moving to bioreactors of the size that could be applied in man.

Meanwhile the clinical workers in the unit have been applying the current 'state-of-the-art' artificial liver in sick patients at the Royal Free Hospital. This is a non-biological machine that absorbs out toxins but does not have a cell component, and thus cannot replicate the function of the liver in the way that the bio-artificial liver we work towards will. The machine has provided some help to patients, and by using it we provide the current 'best' to certain sick patients, but it also makes us very aware just how far short the current machine is from the functioning bio-artificial liver machine that we need in this field. As the list of our activities shows we are making steady progress to that major aim. Our wide-ranging laboratory programme involves not only the work already referred to above, but also genetic modification of our cultured hepatocytes to stimulate them to provide the fullest possible spectrum of normal liver function.

As always we are immensely grateful to our supporters. The funds provided from the Liver Group are all devoted to our aim of improving the treatment of liver disease.

Humphrey Hodgson *FRCP, F Med Sci.*
Chairman

THE LIVER GROUP
TRUSTEES REPORT
IN RESPECT OF THE ACCOUNTS
FOR THE YEAR ENDING 31 DECEMBER 2004

The Trustees present their report, together with the audited accounts, for The Liver Group for the year ended 31 December 2004.

Constitution

The Liver Group is a registered charity constituted under a Trust Deed dated 28 May 1993.

Principal aims and activities

The principal activity of the charity is the project being conducted to develop an artificial liver. The artificial liver project is being carried out with the funds raised for the continuing "Liver for Life" Appeal.

Reserves policy

Except for such funds as the trustees consider prudent to maintain for the purposes of management and administration of the charity for the foreseeable future, all unrestricted funds are designated for the purposes of the "Liver for Life" project and the general charitable objects of the charity.

Trustees' responsibilities statement

Charity legislation requires the trustees to prepare accounts of the charity for each financial year. In accordance with the Trust Deed, such accounts are required to be subject to audit. In so doing, the Trustees are required to prepare accounts which show a true and fair view of the state of affairs of the charity and of the application of its resources for the financial period. In preparing those accounts, the trustees:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- follow applicable Accounting Standards;
- prepare the accounts on the going concern basis unless it is inappropriate to presume that the charity will continue in operation.

In accordance with charity legislation, the trustees are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time, the financial position of the charity. They are also responsible for safeguarding the assets of the charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Signed on behalf of the Trustees:

Humphrey Hodgson
Trustee

**REPORT OF THE INDEPENDENT AUDITORS
TO THE TRUSTEES OF
THE LIVER GROUP**

We have audited the financial statements which comprise the statement of financial activities, the balance sheet and the related notes. These financial statements have been prepared under the historical cost convention and the accounting policies set out therein. We have been appointed as Auditors under Section 43 of the Charities Act 1993 and report in accordance with Regulations made under Section 44 of that Act.

Respective Responsibilities of the Trustees and Auditors

The Trustees responsibilities for preparing the Annual report and the financial statements in accordance with applicable law and United Kingdom Accounting Standards are set out in the Statement of the Trustees Responsibilities.

Our responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and United Kingdom Auditing Standards. This report is made solely to the Trustees, as a body, in accordance with Section 43 of the Charities Act 1993. Our audit work has been undertaken so that we might state to the Trustees those matters we are required to state to them in an auditors report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Trustees as a body, for our audit work, for this report or for the opinions we have formed.

We report to you our opinion as to whether the financial statements give a true and fair view, of the state of affairs as at the year-end, and of the incoming resources and application of resources of the charity in that year, and comply with Regulation 3 of the Charities (Accounts and Reports) Regulations 2000. We also report to you if, in our opinion, the accounting records have not been kept in respect of the charity in accordance with Section 41 of the 1993 Charities Act, if the statement of accounts do not accord with the records of the charity, if any information contained in the statement of accounts is inconsistent in any material respect with any report of the charity Trustees prepared under Section 45 of the Charities Act 1993, and if any information or explanations to which we are entitled have not been given to us. We will also report to you if the accounts do not comply with the Trust Deed of the Charity.

We will communicate to the Charity Commissioners any matter of which we come aware which relates to the activities or affairs of the charity which is likely to be of material significance to the Charity Commissioners.

We read information contained in the Annual Report, and consider whether it is consistent with the audited financial statements. This information comprises only the Trustees Report. We consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the financial statements. Our responsibilities do not extend to any other information.

Basis of Opinion

We conducted our audit in accordance with United Kingdom Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of significant estimates and judgements made by the Trustees in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Charity's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularities or error. In forming our opinion we also evaluated the overall adequacy of the presentation of the information in the financial statements.

Opinion

In our opinion the financial statements give a true and fair view of the state of affairs of the Charity as at 31 December 2004 and of the incoming resources and the application of resources of the charity for that year, have been properly prepared in accordance with the Charities Act 1993 and comply with Regulation 3 of the Charities (Accounts and Report) Regulations 2000.

Alperton House
Bridgewater Road
Wembley
Middlesex HA0 1EH

Beever and Struthers
Chartered Accountants
Registered Auditors
An auditor under S43(2)(a) of the Charities Act 1993

Date

THE LIVER GROUP

STATEMENT OF FINANCIAL ACTIVITIES

FOR THE YEAR ENDED 31 DECEMBER 2004

| | Notes | Unrestricted funds £ | Restricted funds £ | Total 2004 £ | Total 2003 £ |
|---|-------|----------------------------|--------------------------|-----------------------------|--------------------|
| Incoming resources | | | | | |
| Donations | | 16,030 | 36,500 | 52,530 | 17,047 |
| Bank interest receivable | | 53,428 | - | 53,428 | 45,914 |
| Incoming resources for year | | <u>69,458</u> | <u>36,500</u> | <u>105,958</u> | <u>62,961</u> |
| Resources expended | | | | | |
| Direct charitable expenditure | 1 | | | | |
| Research expenditure - UCL | | 259,108 | 10,967 | 270,075 | 190,655 |
| Workshop – Imperial College | | 3,052 | - | 3,052 | - |
| Management and administration of the charity | | 2,088 | - | 2,088 | 1,992 |
| Outgoing resources for year | | <u>264,248</u> | <u>10,967</u> | <u>275,215</u> | <u>192,647</u> |
| Net incoming (outgoing) resources for the year | | (194,790) | 25,533 | (169,257) | (129,686) |
| Fund balances at 1 January 2004 | | 1,287,848 | 1,500 | 1,289,348 | 1,419,034 |
| Fund balances at 31 December 2004 | | <u>1,093,058</u> | <u>27,033</u> | <u>1,120,091</u> | <u>1,289,348</u> |

**THE LIVER GROUP
BALANCE SHEET
AS AT 31 DECEMBER 2004**

| | Notes | 2004 £ | 2003 £ |
|-------------------------------------|-------|------------------|------------------|
| Current assets | | | |
| Interest receivable | | 4,848 | 7,286 |
| Other debtors | | 331 | 780 |
| Cash at bank | | | |
| - Current account | | (51,147) | 500 |
| - On short-term deposit | | 1,251,309 | 1,321,512 |
| | | <u>1,205,341</u> | <u>1,330,078</u> |
| Less: Creditors | | | |
| Amounts falling due within one year | | | |
| Amount due to UCL | | 83,250 | 38,730 |
| Other | | 2,000 | 2,000 |
| | | <u>85,250</u> | <u>40,730</u> |
| Net current assets | | <u>1,120,091</u> | <u>1,289,348</u> |
| Financed by | | | |
| Unrestricted funds | | | |
| - General | | (43,058) | 87,848 |
| - Designated | 2 | 1,050,000 | 1,200,000 |
| Restricted funds | 3 | 27,033 | 1,500 |
| Total funds | | <u>1,120,091</u> | <u>1,289,348</u> |

These Accounts were approved by the Trustees on

and signed on their behalf by:-

Clare Selden
Trustee:

'Liver for Life' Appeal – Five Year Projections (2005-2009)

| | |
|------------------------------------|-------------------|
| Research salaries and studentships | 1,010,000 |
| Consumables | 900,000 |
| Equipment budget | 500,000 |
| Research presentations | 25,000 |
| Administration of charity | 25,000 |
| | <u>£2,460,000</u> |
| | ===== |

These projections do not form part of the audited accounts of the charity.

THE LIVER GROUP
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR TO 31 DECEMBER 2004

PRINCIPAL ACCOUNTING POLICIES

Basis of accounting

The accounts have been prepared under the historical cost convention and in accordance with applicable Accounting Standards and the Statement of Recommended Practice, Accounting and Reporting by Charities (2000) issued by the Charity Commission.

Voluntary income

Donations represent voluntary amounts received during the period and arise within the United Kingdom. Covenant and Gift-Aid income is included gross of attributable tax recoverable.

Investment income

Interest receivable is credited to income in the period in which it is earned and is included gross of attributable tax recoverable.

Expenditure

Research expenditure, incurred on behalf of the charity and recharged to The Liver Group by University College London (UCL), is charged to the statement of financial activities (SOFA) on an accruals basis. The accounts include expenditure from the charity's funds on capital equipment and laboratory infrastructure, treated as resources expended in these accounts.

Fund accounting

Total funds comprise the accumulated surplus or deficit on the statement of financial activities. Unrestricted funds are available for use at the discretion of the Trustees in furtherance of the general objectives of the charity. Restricted funds are funds subject to specific restricted conditions imposed by donors. The purpose and use of the designated funds are set out in the notes to the accounts.

Taxation

The charity is not liable to income tax on income derived from its charitable activities as it falls within the various exemptions available to registered charities.

The charity is not registered for value added tax (VAT) and is therefore unable to reclaim the input tax it suffers on its purchases. Expenditure in the accounts is therefore shown inclusive of VAT where appropriate.

THE LIVER GROUP

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED 31 DECEMBER 2004

| | | | |
|------------------------------|--|-------------------|-------------------|
| 1. Resources expended | | 2004 | 2003 |
| | Resources expended include: | | |
| | Staff costs | £184,780 | £121,574 |
| | Research consumables and laboratory | £88,347 | £69,081 |
| | Auditors' remuneration (including VAT) | | |
| | - audit | £663 | £700 |
| | - accounting | £1,224 | £1,292 |
| | | <u> </u> | <u> </u> |

The average weekly number of employees of UCL working for the Liver Group during the year was 5. (2003: 4). At the year-end there were 4 employees of UCL funded by the charity working on the Liver Group research. In addition there were 3 PhD students paid a stipend under a 3-year studentship scheme.

Trustees' expenses reimbursed during the year amounted to £21 (2003: £nil).

2. Designated funds

Designated funds of £1,050,000 have been set aside by the Trustees for the purposes of the "Liver for Life" project (2003: £1,200,000).

3. Restricted funds

| | Balance b/f at 1 January 2004 | Incoming resources | Resources expended | Balance c/f at 31 December 2004 |
|---|--|-----------------------|-----------------------|--|
| Dunhill Medical Trust Fellowship | - | 36,500 | (10,967) | 25,533 |
| Billingsgate Christian Mission Charitable Trust Studentship | 1,500 | - | - | 1,500 |
| | <u>£1,500</u> | <u>£36,500</u> | <u>(£10,967)</u> | <u>£27,033</u> |
| | <u> </u> | <u> </u> | <u> </u> | <u> </u> |

4. Financial commitments

At 31 December 2004, the charity, through UCL, was committed to staff contracts and running costs amounting to £800,000 (2003: £500,000) for varying periods to end of September 2008.

5. Research assets

As explained in the accounting policies (expenditure) the Charities' expenditure on capital equipment and laboratory infrastructure has been treated as an expense and not an asset of the Charity. The Charity owns the capital equipment and laboratory infrastructure but since the assets are of such a specialist nature the Trustees do not believe they are readily realisable and should, as a consequence, not be recognised in the Charities' balance sheet as an asset.

THE LIVER GROUP

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2004

“Liver for Life Appeal” – List of donors to date

We are grateful to the following for donations to the “Liver for Life” Appeal:

| | |
|--|--|
| Associated British Ports | Violet M Richards Charity |
| BAE Systems | Wilkinson Hardware Stores Ltd |
| Bank of England | Anonymous |
| Barclays Bank (Knightsbridge Limited) | Anonymous |
| Billingsgate Christian Mission Charitable Trust (The Fishmongers' Company) | The Telegraph Plc |
| Boots Plc | Pfizer Ltd |
| Bowring Plc | Schroders Plc |
| British Aerospace | Brian Wright Esq. |
| BTR Plc | C E Heath Plc |
| Charles Littlewood Charitable Trust | Morgan Crucible Company Plc |
| Citybank | Honeywell Plc |
| Clydesdale Bank/Yorkshire Bank | Thomson Corporation |
| Commercial Union | Life Technologies |
| Communis plc | Lloyds Bank Plc |
| Cookson Group Plc | Price Waterhouse Plc |
| Council of Forte Trust Fund | IBJ |
| Courage Plc | Seagrams Distillers Plc |
| Coutts and Co | In Memoriam |
| D M Wilton | Jardine Insurance Services Ltd |
| Dako Limited | KPMG Peat Marwick |
| Economist Plc | Laing, London |
| EJH Stephenson (Deceased) Charitable Trust | Royal London Insurance Ltd |
| Friends Provident | Tomkins Plc |
| Glaxo Plc | Morgan Grenfell |
| Guardian Royal Exchange Plc | Robert Fleming Holdings Ltd |
| HJ Heinz Co. Ltd Charitable Trust | New Brunswick Plc |
| Hon C A Pearson's Charity Trust | Sunlife Assurance Plc |
| Mars UK Corporate Services Ltd | Smiths Industries |
| Menzies Group | Vauxhall Plc |
| Rio Tinto plc | Pharmaceutical Brand Consultancy Int. |
| Societe Generale United kingdom Charitable Trust | The Really Useful Group Ltd |
| The Bergqvist Charitable Trust | Richard Wilkinson Esq |
| The Bowerman Memorial Trust | Rudolf Wolff & Co. Ltd |
| The Clothworkers' Foundation | Securicor Plc |
| The Dunhill Medical Trust | Special Trustees for Hammersmith and Acton Hospitals |
| The Fitton Trust | Racal Charitable Trust |
| The Garfield Weston Foundation | TI Group |
| The Haberdashers Company | Land Securities Plc |
| The Hamamelis Trust | Conoco Philips |
| The Hartnett Charitable Trust | Cooper Charitable Trust |
| The John Ellerman Foundation | The Mary Webb Trust |
| The Mercers Company | The Oakdale Trust |
| The Paul Balint Charitable Trust | Thriplow Charitable Trust |
| The Sobell Foundation | The Penny in the Pound Fund Charitable Trust |
| The Stella Symons Charitable Trust | N Smith Charitable Settlement |
| The Thomas Sivewright Catto Charitable Settlement | The Gerald Palmer Trust |
| The Wolfson Foundation | Saddlers' company |
| William & Mabel Morris Charitable Trust | ME Rickman Trust |

THE LIVER GROUP

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED 31 DECEMBER 2004

Publications in 2004 arising from work in the Liver Group Laboratory

Damelin LH, Coward S, Choudhury SF, Chalmers SA, Cox IJ, Robertson NJ, Revial G, Miles M, Tootle R, Hodgson HJ, Selden C. Altered mitochondrial function and cholesterol synthesis influences protein synthesis in extended HepG2 spheroid cultures. *Arch Biochem Biophys.* (2004) Dec 15;432(2):167-77

Mellor N, Themis M, Selden C, Jones M, Hodgson HJ. Characteristics of murine histidinaemia and its potential for genetic manipulation. *Liver Int.* (2004) Aug;24(4):354-60.

Rahman TM, Selden C, Khalil M, Diakanov I, Hodgson HJ. Alginate-encapsulated human hepatoblastoma cells in an extracorporeal perfusion system improve some systemic parameters of liver failure in a xenogeneic model. *Artif Organs.* (2004) May;28(5):476-82.

Lindsay JO, Sandison A, Cohen C, Brennan FM, Hodgson HJF. IL-10 gene therapy is therapeutic for Dextran Sodium Sulfate induced murine colitis. *Dig. Dis Sci* (2004) 49:1327-1334;

Craig CE, Quaglia A, Selden C, Lowdell M, Hodgson H, Dhillon AP. The histopathology of regeneration in massive hepatic necrosis. *Semin Liver Dis.* (2004) 24(1):49-64.

Selden C, Growth Factors and the Liver. (2004) In "Principles of Medical Biology- The liver in Biology and Disease" Ed. E Bittar. Vol 15. 147-166.

Coward SM, Oakley P, Rees M, Selden C, Hodgson HJF. The effect of established growth and pro-differentiation factors on cyp4501a1/2 activity in cultured primary human hepatocytes. *Hepatology* (2004) 40: (4.suppl.1)651A

Coward S, Hodgson HJF, Selden C. A rotary microgravity culture strategy promotes alginate encapsulated HepG2 cells as the biological component of a bioartificial liver. *Hepatology* (2004) 40: (4.suppl.1)506A

Selden C, Oakley P, Mellor, N, Chalmers S, Rees M, Hodgson HJF. Growth factors improve efficiency of lentiviral transfection in human adult and foetal liver cells in vitro. (2004) *Presented at British Association for the Study of the Liver Meeting, Cambridge*

Damelin LH, Collins P, Coward S, Oakley P, Selden C, Hodgson HJF. An in vitro model of non-alcoholic fatty liver. (2004) *Presented at British Association for the Study of the Liver Meeting, Cambridge*

Saich RC, Selden C, Rees M and HJF Hodgson. Acute liver failure plasma induces apoptosis in primary human hepatocytes by a caspase dependent pathway. (2004) *Presented at British Association for the Study of the Liver Meeting, Cambridge*

Laurson J, Clements MO, Mavri D, Selden C, Hodgson HJF. Cell colonies expressing both hepatocytes and biliary epithelial cell markers can be isolated from non-parenchymal cells of alcohol cirrhotic liver explants. (2004) *Presented at British Association for the Study of the Liver Meeting, Cambridge*

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