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CURRICULUM VITAE

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Professor of Molecular Medicine

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Summary

Education

1970 Born (19.08.1953) Tehran, Iran. Moved to UK (Age 16) to complete Schooling.
1973/75 Studied Higher National Diploma at Brighton College of Technology.
1975/76 Completed 4 year BSc Developmental Biology in 1 year, University of Aberdeen.
1976/77 MSc in Biochemistry, University of Aberdeen.
1977/79 BBSRC Fellowship, PhD in Cell & Molecular Biology, University of Sussex.

Fellowships

1979/82 Beit Postcodoctoral Fellowship at University of Sussex.
1983/85 EMBO and MRC Fellowships at Universities of Amsterdam and Sussex.

Academic Positions Held

1985 Lecturer, King's College London (KCL)
1986 Founded Molecular Genetics Unit and was promoted to Senior Lectureship at KCL.
1993 Appointed founding Head of Department of Molecular Medicine, KCL.

Awards and Honours

Personal Chair in Molecular Medicine (1996), elected to the Fellowship of the Royal College of Pathologists (FRCPath., 1997), and the Royal Society for the Encouragement of Arts, Manufacture & Commerce (FRSA, 1997). Co-founded the European (1997) and then the International Society for Cancer Gene Therapy (1999). Appointed to the MRC Stem Cell Strategic Review Panel (2003). Member, MRC College of Experts, Molecular & Cellular Medicine Board (2005). President, International Society for Cell & Gene Therapy of Cancer (ISCGT - 2007/08, currently, ISCGT Secretary General (since 2014). Fellow, Society of Biology (FSB, 2011). Elected to the Council of US Society for Experimental Biology & Medicine (2015).

Biotechnology and Pharmaceutical Activities

Previous: Appointed to the Scientific Advisory Board: PolyMASC (1997/2000) and Onyvax (1998/2000). *Ad hoc* advisor to investment banks the financial institutions, as well as the pharmaceutical industry. Co-founded Qugen Therapeutics (Singapore), appointed board member and consultant (2000-2003). Co-holder of three granted patents.

Current: Advisor/consultant to one of the largest pharmaceutical companies in the world in their Molecular Medicine program, with a specific focus on cancer biomarkers, tumour immunology and immune therapeutics (including clinical trials). Scientific Advisory Board member and consultant to a number of biotech and pharmaceutical companies.

Scientific Journals and Publications

Editorial Board Member: Cancer Gene Therapy (since 1995), Tumour Targeting (1998/99), Cancer Immunology Immunotherapy (since 1999), Gene Therapy (since 1999) and Experimental Biology and Medicine (since 2008). Published over 200 research papers.

Clinical Trials

Established the Rayne Cell and Gene Therapy Suite of laboratories (RCTS) for the GMP production of Investigational Medicinal Products (IMP). RCTS is licensed by the Medicines and Healthcare products Regulatory Agency (MHRA) of the Department of Health in UK (DoH), to produce cell and viral vectors for clinical trials. Currently hold two licences: Manufacturing Authorisation for the production of Investigational Medicinal Products (MA-IMP), also a Specials Licence for production of Advanced Therapy Medicinal Products (ATMP) for off-trail use. Granted permission by the DoH for multiple clinical trials in immune therapy and immune gene therapy of solid tumours and leukaemia. Authorised by the MHRA to act as a Qualified Person (QP) for the release of cell and gene therapy products for clinical trials since 2004. Designated Individual (DI) on the Human Tissue Authority (HTA) licence for the storage, import, export and use of human cells and tissue.

PERSONAL DETAILS

NAME:	Farzin
SURNAME:	Farzaneh
DATE OF BIRTH:	19th August 1953
AGE:	62
PLACE OF BIRTH:	Teheran, Iran

ACADEMIC QUALIFICATIONS:

College/University	Subject	Degree	Grade	Dates
Brighton College Tech.	Applied Biology	H.N.D.	Distinction	1973 - 75
University of Aberdeen	Developmental Biol.	B.Sc.	2.1	1975 - 76
University of Aberdeen	Biochemistry	M.Sc.		1976 - 77
University of Sussex	Cell & Mol. Biol.	D.Phil.		1977 - 79
Royal College of Pathologists (London)		MRCPath.		1991
Royal College of Pathologists (London)		FRCPath.		1997

STUDENTSHIP/FELLOWSHIPS:

Title	Institute	Dates
SERC Studentship	University of Sussex	1977 - 79
Beit Memorial Fellowship	University of Sussex	1979 - 82
EMBO Fellowship	University of Amsterdam	1982 - 83
MRC Fellowship	University of Sussex	1983 - 84

ACADEMIC POSITIONS HELD:

'New Blood' Lecturer	Department of Obstetrics & Gynaecology King's College School of Medicine and Dentistry	1985 - 87
Senior Lecturer	Molecular Genetics Unit	1987 - 93

	Department of Obstetrics & Gynaecology King's College School of Medicine and Dentistry	
Director	Molecular Medicine Unit King's College School of Medicine & Dentistry	1990 - 93
Head of Department	Department of Molecular Medicine King's College School of Medicine & Dentistry (Now Guys', King's and St. Thomas' School of Medicine, King's College London).	1993-2004

PRESENT POSITION

Personal Chair in Molecular Medicine, King's College London	Since 1996
Chair in Molecular Medicine Department of Haematological Medicine Guys', King's and St. Thomas' School of Medicine, King's College London	Since 2004
Honorary Consultant in Molecular Medicine, King's College Hospital King's Healthcare Trust, NHS, London	Since 2004
Honorary Consultant, Qualified Person, at the Institute of Child Health and the Great Ormond Street Hospital NHS Trust	Since 2010
Qualified Person, BRC GMP Facility at Guy's and St Thomas' Hospital NHS Trust	Since 2014

MEMBERSHIP/FELLOWSHIP OF LEARNED SOCIETIES:

Awarded Membership of the Royal College of Pathologists (1991).

Elected Fellow of the Royal College of Pathologists (1997).

Elected Fellow of the Royal Society for the Encouragement of Arts, Manufacture & Commerce (RSA), 1997, for contributions to the development and public understanding of cancer gene therapy.

Elected Fellow, Society of Biology (2011).

Elected to the Council of the US Society for Experimental Biology and Medicine (2015).

Appointed Chair of the external Scientific Advisory Committees at a number of research institutes in Europe and Asia.

OTHER ACADEMIC ACTIVITIES:

Co-opted Graduate Member, Committee of the British Society for Developmental Biology, 1977-1979.

Member, Organising Committee, UK Molecular Biology of Cancer Network, 1988-1991.

Appointed, Recognised Teacher, University of London, since 1985.

Representative, King's College School of Medicine & Dentistry, on the University of London Board of Biochemistry, since 1988.

Appointed, member of the Health and Safety Committee, King's College School of Medicine & Dentistry, since 1991.

Biological Safety Officer, King's College School of Medicine & Dentistry, 1991-1999.

Founding Organiser and Scientific Panel Member, European Conferences on Gene Therapy of Cancer, 1994-1999.

Member, Editorial Board *Cancer Gene Therapy*, since 1995.

External examiner, Intercalated BSc in Biochemistry, St.George's Hospital Medical School, 1995/98 and 2001/04.

Representative of King's College London on the "Technology Foresight" consultative group 1996/98.

Member, Scientific Advisory Board, PolyMASC Pharmaceuticals, since 1997-2000.

Member, Scientific Advisory Board, Onyvax, 1998-2000.

Member, EU Concerted Action in Peptide Sensitisation, 1998-2001.

Member, Editorial Board, *Tumour Targeting*, 1998-1999.

Vice President (1998/2001) and Secretary General (since 2001), International Society for Cell and Gene Therapy of Cancer (ISCGT).

Member, Editorial Board, *Gene Therapy*, since 1999.

Member, Editorial Board, *Cancer Immunology and Immunotherapy*, since 1999.

Founding Board Member, Qugen Therapeutics, Singapore, 2000-2003.

Cited in Barons Who's Who, the "500 Great Minds of the Early 21st Century". Published 2002.

Member, MRC Stem Cell Strategic Grant Review Panel, 2003.

Member, LRF International Fellowships Panel, 2003.

Adjunct Professor, University Kebangsaan Malaysia and Scientific Advisor to UKM Medical Molecular Biology Institute, 2003.

External examiner, MSc Biotechnology and MRes Biotechnology programmes at University of Essex, 2005/08.

Member, UK Department of Trade and Industry's Oncology Delegation to the University of Minnesota and the Mayo Clinic (2004).

Member, MRC College of Experts, Molecular & Cellular Medicine Board, 2005.

President, International Society for Cell & Gene Therapy of Cancer (2007-2008).

Panel member, MRC Oncology Showcase Review Panel, 2008.

European Editor, *Experimental Biology and Medicine*, since 2008.

Appointed to the Expert advisory Group, Commission on Human Medicines, Department of Health, UK (2015).

Appointed to the Clinical Trials Section, Biologicals and Vaccines Expert Advisory Group (CTBVEAG), Medicines and Healthcare products Regulatory Agency, MHRA (2015).

PATENTS:

Patent number 2244646B, granted 25.05.94 in USA, on the prevention of viral infection, especially (but not exclusively) retroviral infection, by inhibitors of poly(ADP-ribose) polymerase. This patent is held jointly with Professor Sydney Shall & Dr. Manoocher Tavassoli (University of Sussex), and Professor Mary Collins (Institute of Cancer Research). King's College London, University of Sussex and the Institute of cancer Research, share equal proprietary rights on this patent.

Patent application filed, on gene therapy independent expression of exogenous proteins on the surface of target cells, based on work carried out jointly with Dr David Darling at the Molecular Medicine at King's. This application was filed by the CRC/LRF technology transfer company (Cancer Research Ventures).

Granted International Patents (F Farzaneh, Joop Gäken, Stephen Russell), on a new gene therapy vector: "the Fusagene vector system". Patent filed by the CRC/LRF technology transfer company (Cancer Research Ventures) and assigned to Qugen Therapeutics, Singapore.

Granted International Patents (David Darling, Chris Hughes, Farzin Farzaneh). On "retroviral concentration and purification". Patent filed by the CRC/LRF technology transfer company (Cancer Research Ventures) and assigned to Qugen Therapeutics, Singapore.

CONSULTANCIES:

Advisor/consultant to one of the largest pharmaceutical companies in their Molecular Medicine Program, with a specific focus on cancer biomarkers, tumour immunology and immune therapeutics (including clinical trials). Scientific Advisory Board membership and consultancies in a number of biotech companies, and large pharmaceutical companies in UK, Europe and the United States. Some details can be provided under confidentiality agreement.

CLINICAL TRIALS:

A number of translational studies, supported by the indicated project grants outlined above, have culminated in Phase-I/II clinical trials approved by the Medicines Control Agency (now MHRA). A selected list includes:

- DC based vaccination in hepatocellular carcinoma (in collaboration with Dr Phillip Harrison – Institute of Liver Studies, King's College Hospital). Dose escalation study confirming feasibility and safety of intravenous administration of up to $5x10^8$ tumour lysate pulsed DC.
- DC based vaccination for hTERT peptides in breast and prostate carcinoma (in collaboration with Professor Oleg Eremin and Dr Adrian Robins, Queen's Medical Centre, Nottingham). Demonstration of feasibility, safety and substantial immunological responses (up to 5% tetramer positive $CD8^+$ cells in vaccinated

patients). Application for the start of new trial, with inclusion of $CD4^+$ stimulation, under consideration by MHRA.

- DC based vaccination for metastatic colorectal tumours (in collaboration with Professors Nagy Habib, Robert Lechler and colleagues - Imperial College London). Analysis of autologous vs matched allogeneic tumour lysate pulsed DC – trial continuing.
- Recent grant of regulatory authority permission by the Department of Health (Gene Therapy Advisory Committee, GTAC; and Medicines and Healthcare products Regulatory Agency, MHRA) to initiate a clinical trial for the analysis of the efficacy of autologous Acute Myeloid Leukaemia blasts that are genetically modified to express B7.1 (CD80) and IL-2, by lentivirus mediated transduction. This is the first AML gene therapy trial, the first use of lentiviral vector for immune gene therapy (the only other lentivirus based gene therapy is in HIV patients), and the first combination gene therapy trial anywhere in the world.
- Recent grant of regulatory permission (MHRA and GTAC/NRES) for a Phase-I clinical trial in non-trnasplantable poor prognosis AML patients with genetically modified AML cells expressing B7.1 (CD80) and IL-2.
- Recent grant of regulatory permission (MHRA and NRES) for a Phase-I clinical trial in poor prognosis solid tumours for vaccination with a new adjuvant formulation containing a library of hTERT peptides, combined with depletion of regulatory, immune suppressive, T cells (Tregs).
- Production of virak vectors for clinical studies in Europe. These constitute the manufacture of the largest number in Europe (academia or industry) of clinical retro- and lenti-virus vects under GMP. The later includes the generation of vectors for several high publicity Chimeric Antigen Receptor (CAR) T cells, including the development of vectors for site specific endonuclease mediated (CRISPER) generation of allogeneic CAR T cells for immune therapy of leukaemias.

The Rayne Cell Therapy Suite (RCTS)

As the director of this MHRA and Human Tissue Authority accredited GMP facility, I am responsible for the management of these laboratories which have held Manufacturing Authorisation for the production of Investigational Medicinal Products (MA-IMPs) including Haematological Stem Cells, Tumour Cell Vaccines and viral vectors for gene therapy since 2004. I am the Designated Individual (DI) on our HTA licence and the Qualified Person (QP) on our MHRA licence. In addition I am a QPs for the GMP facilities at the Institute of Child Health (ICH) and at Guy's and St Thomas NHS Foundation Trust in London. I have also served as the QP for certification of non-EU GMP facilities as being compliant with the EU standards and for importation of gene therapy Investigational Medicinal Products (IMPs) from outside the European Union into UK.

Teaching

Undergraduate: Co-organiser and tutor, Biology of Cancer, a third year undergraduate course for Life Scientists at King's College London (class-size of about 160 students in each academic year).

Postgraduate: Supervision of over twenty PhD and MD students. Currently supervising two PhD students.

MAJOR RESEARCH GRANTS OBTAINED

Completed:

1. Medical Research Council project grant to study the involvement of ADPRT activity in muscle cell differentiation. PI: F Farzaneh & S Shall. *Duration: 1980/83. Value: £25,000.*

2. Medical Research Council project grant to study DNA strand break formation and ADPRT involvement in HL-60 cell differentiation. PI: F Farzaneh & S Shall. *Duration: 1983/86. Value: £70,000.*

3. EEC project for the study of the role of ADPRT and DNA ligase activities in cellular differentiation and carcinogenesis in haematopoietic cells. PI: S Shall, JC David & F Farzaneh. *Duration: 1987/89. Value: £15,000.*

4. Joint Research Committee (composed of King's Voluntary Research Trust and Camberwell Health Authority) project grant for the investigation of the role of proto-oncogenes c-*fos* and c-*myc* by the inducible expression of their sense and 'anti-sense' transcripts from the appropriate clones of these genes. PI: F Farzaneh. *Duration: September 1986/89. Value: £45,000.*

5. Cancer Research Campaign project grant for the molecular genetic analysis of the induction of cellular differentiation in the human promyelocytic leukaemia cell line, HL-60. PI: F Farzaneh. *Duration: 1986/89. Value: £104,000.*

6. Beit Medical Research Fellowship, awarded to Dr. Rachel Trowbridge (under supervision of F Farzaneh) for the analysis of the role of hepatitis B virus in the development of hepatocellular carcinoma. *Duration: 1987/90. Value: £45,000.*

7. King's College London, Research Strategy Fund, for the analysis of oestrogen inducible genes by a novel transactivation trap. PI: F Farzaneh. *Duration: 1989/91. Value: £40,000.*

8. Leukaemia Research Fund project grant for the analysis of the induction of monocytic differentiation in the human promyelocytic cell line, HL-60. PI: F Farzaneh. *Duration: 1988/91. Value: £68,000.*

9. Medical Research Council project grant for the study of the utility of viral promoter/enhancer sequences in myeloid progenitor cells. PI: F Farzaneh. *Duration: 1989/92. Value: £25,000.*

10. Medical Research Council. Study of growth factors and cytokine expression in regenerating human liver. PI: F Farzaneh. *Duration: 1990/93. Value: £93,000.*

11. King's Academic Development Fund. Cloning of the murine ferric reductase gene. PIs: F Farzaneh & T Peters. *Duration: 1992/93. Value: £25,000.*

12. Cancer Research Campaign. Identification of genes involved in the control of myeloid cell differentiation by retroviral insertional mutagenesis. PI: F Farzaneh. *Duration: 1990/94. Value: £145,000.*

13. King's Academic Development Fund. Cloning of the murine ferric reductase gene. PIs: F Farzaneh & TJ Peters. *Duration: 1992/93. Value: £25,000.*

14. Joint Research Committee. Identification of liver specific transregulators of Hepatitis B virus transcription and replication. PI: F Farzaneh. *Duration: 1991/94. Value: £48,000.*

15. Dixon's Charitable Research Trust. Immune gene therapy of ovarian cancer. PI: F Farzaneh. *Duration 1995. Value: £60,000.*

16. Leukaemia Research Fund. Analysis of the molecular basis of retinoic acid mediated regulation of myeloid cell differentiation. PI: F Farzaneh *Duration: 1992/95. Value: £150,000.*

17. Leukaemia Research Fund. Analysis of genes involved in myeloid cell differentiation. PI: F Farzaneh. *Duration: 1993/96. Value: £50,000.*

18. Medical Research Council. Cloning of the murine ferric reductase gene. PI: F Farzaneh. *Duration: 1993/96. Value: £93,000*

19. South East Thames Regional Health Authority. The role of cholecystokinin and gastrin receptors in the growth of tumours of human pancreas and biliary tract. Awarded jointly to Department of Molecular Medicine and Surgery. PIs: IS Benjamin, A Bennett, IA Tavares, I Stamford, F Farzaneh & P Towner. *Duration: 1993/96. Value: £62,000 (£31,000 Molecular Medicine).*

20. Lewis' Charitable Trust. Immune gene therapy of cancer. PI: F. Farzaneh. *Duration 1994/97. Value: £100,000*.

21. Leukaemia Research Fund. Molecular genetic analysis of apoptosis in myeloid and lymphoid cells. Awarded jointly to Department of Biological Sciences, University of Keele and Department of Molecular Medicine, KCSMD. PIs: F Farzaneh & G Williams *Duration: 1995/99. Value: £360,000 (£180,000 to KCSMD).*

22. Leukaemia Research Fund. Induction of anti-leukaemia immune responses by simultaneous transduction of B7.1/IL-2 in AML cells. PIs: F Farzaneh, D Darling & J Gäken. *Duration: 1996/99. Value: £200,000*.

23. British Heart Foundation. Analysis of the transcription factor GATA6. PIs: R Patient, J Pizzey, F Farzaneh & A Bomford. *Duration: 1996/99. Value: £190,000.*

24. Royal College of Pathologists. Jean Shanks Clinical Research Fellowship, for "Gene therapy of ovarian cancer with tumour cytokine-responsive lymphocytes". Awarded to Dr John Maher under supervision of F Farzaneh. *Duration: 1997/2000. Value: £142,000*.

25. Lewis' Charitable Trust. Immune gene therapy of cancer. PI: F Farzaneh. *Duration: 1998/01. Value: £128,000*.

26. Stanford Rook PLC and the Royal Marsden Hospital Trust. Analysis of *mycobacterium vaccae* as an adjuvant in immune therapy of malignant disease. PIs: B Souberbielle & F Farzaneh. *Duration: 1996/02. Value: £250,000.*

27. Wellcome Trust. Molecular and functional characterisation of novel duodenal iron-regulated genes. PIs: A McKie, F Farzaneh & RJ Simpson. *Duration: 1998/02. Value: £148,311.*

28. Leukaemia Research Fund. Analysis of LAR and IT109, two new apoptosis controlling genes. PIs: Trayner I, Williams G & Farzaneh F. *Duration 1999/02. Value: £139,118.*

29. British Heart Foundation. Analysis of the transcription factor GATA6. PIs: R Patient, J Pizzey, F Farzaneh & A Bomford. *Duration: 1999/02. Value: £120,000.*

30. The Wellcome Trust. Molecular and functional characterisation of novel duodenal iron-regulated genes. PIs: A McKie, F Farzaneh & R Simpson. *Duration: 2000/02. Value: £79,000.*

31. The Wellcome Trust. Inhibition of HIV infection of CD4 T cells by co-ordinated blockade of multiple steps in the virus life-cycle. PIs: F Farzaneh, A Vyakarnam, J Gäken, PJ Easterbrook & MD Kemeny. *Duration: 2000/02. Value: £75,000.*

32. European Commission. Key Action on Ageing. Imagin: Immunology and Ageing in Europe. Transient immortalisation with Large T antigen. PIs: F Farzaneh, K Ford & D Darling. *Duration: 2000/03. Value: ECU 750,000 (Approx. £25K at King's).*

33. Biotechnology and Biological Sciences Research Council (BBSRC). Development of an integrating adenoviral vector. PIs: J Gäken, M Tavassoli & F Farzaneh. *Duration: 2000/03. Value: 76,000.* Ref: 47/GTH12529

34. Biotechnology and Biological Sciences Research Council (BBSRC). Efficient and specific tumour cell killing by apoptin linked to VP22. PIs: M Tavassoli, J Gäken & F Farzaneh. *Duration: 2000/03. Value: £176K.* Ref: 47/GTH12530

35. Lewis Charitable Trust. Immune gene therapy of cancer. PIs: D Darling & F Farzaneh. *Duration: 2000/03. Value: £127K.* Ref: CHA/KC

36. The Wellcome Trust. Characterisation of human T-cell responses to Glypican 3 generated *in vitro* by antigen loaded autologous dendritic cells". Fellowship for Dr James O'Beirne. Project Supervisor: F Farzaneh. Project Sponsor: PM Harrison. *Duration: 2003/04. Value: 59K.* Ref: 070496/2103/2

37. Leukaemia Research Fund. Immunotherapy of leukaemia by leukaemia-DC hybrid cell vaccination. PIs: J Galea-Lauri, GJ Mufti & F Farzaneh. *Duration: 1999/04. Value: £306K.* Ref: 9853

38. Prostate Cancer Collaborative/CRUK. Development of prostate cell lines for functional identification of apoptosis genes. PIs: G Williams & F Farzaneh. *Duration 2003/04. Value: £37K.*

39. Biotechnology and Biological Sciences Research Council (BBSRC). Concentration and purification of enveloped viral gene therapy vectors. PIs: D Darling & F Farzaneh. *Duration: 2001/04. Value: 175K.* Ref: E15365

40. Leukaemia Research Fund. Immune gene therapy of acute myeloid leukaemia. PIs: F Farzaneh, GJ Mufti & M Kemeny. *Duration: 2000/05. Value: £306K.* Ref: 9902

41. Medical Research Council. Cellular and molecular characterisation of HIV resistance mechanisms in CD4 T cells. PIs: A Vyakarnam, R Shattock & F Farzaneh. *Duration: 2000/05. Value: £325K.* Ref: G9901428

42. The golden Charitable Trust. Immune therapy of solid tumours. PIs: Farzaneh F & Harrison P. *Duration: 2001/05. £100K.*

43. Leukaemia Research Fund. TAT-Apoptin mediated induction of apoptosis in leukaemic cells. PIs: J Gäken, M Tavassoli, F Farzaneh & GJ Mufti. *Duration: 2005/06. Value: £85K.* Ref: 04040.

44. Breast Cancer Research Trust. Functional expression analysis of regulatory genes in breast tumour. PIs: G Williams & F Farzaneh. *Duration 01/2005 to 12/2008. Value: £135K.*

45. Elimination of Leukaemia Fund. Immune gene therapy of poor prognosis AML. PIs: GJ Mufti & F Farzaneh. *Duration 05/2005 to 12/2009. Value: £350K.* Ref: ELF/P/14/05.

46. King's Medical Research Trust. The role of T cells in the development of myelodysplasia and its progression to acute myeloid leukaemia. PIs: Mufti GJ & Farzaneh F. *Duration: 09/2005 to 08/2008. PhD Studentship.*

47. Department of Health. Pilot Study of lentivirus transduced acute myeloid leukaemia blasts expressing B7.1 and IL-2, for the induction of grant versus leukaemia effect in poor prognosis AML. PIs: F Farzaneh & GJ Mufti. *Duration: 10/2005 to 10/2008. Value: £350K.* Ref: White Paper on Health.

48. John and Holly Burton Research Programme. Molecular genetic analysis and immune therapy of myeloma. PIs: Mufti GJ, Schey S & Farzaneh F. *Duration: 10/2005 to 09/2010. Value: £1,425K.*

49. The Wellcome Trust. Analysis of the molecular mechanisms controlling the induction of apoptosis by natural styryllactones including Goniothalamin. Applicant: Salmaan H Inayat-Hussain. PIs: F Farzaneh & Gwyn Williams. *Duration: 10/2005 to 9/2008. Value: £76K.* Ref: 076885/Z/05/2

50. Leukaemia Research Fund. B7.1/IL-2 Immune gene therapy of AML – Clinical Research Training Fellowship (Dr Wendy Ingram). PIs: GJ Mufti & F Farzaneh. *Duration 12/2005 to 04/2008. Value: £132K.* Ref: 05088

51. The Engineering and Physical Sciences Research Council (EPSRC). Second generation biolentivirus packaging cell line for facile lentivirus production. PIs: F Farzaneh, D Darling. *Duration 1/2006 to 1/2009. Value: £187K.* Ref: EP/D500346/1

52. Biotechnology and Biological Sciences Research Council (BBSRC). Spontaneously biotinylated lentiviral vectors for envelope independent targeting of infection. PIs: F Farzaneh, D Darling. *Duration: 04/2006 to 04/2009. Value: 197K.* Ref: BB/D014301/1

53. Biotechnology and Biological Sciences Research Council (BBSRC). Packaging cell lines for inherently manufacturable viral vectors. PIs: F Farzaneh, D Darling. *Duration: 1/2007 to 1/2010. Value: 314K.* BB/E005896/1

54. National Institute for Health Research (NIHR) Experimental Cancer Medicine Centre (ECMC). Capital Equipment Grant for the expansion of RCTS GMP facility. PI: F Farzaneh & GJ Mufti. *Duration 2008/09. Value: £350K*

55. IRX Therapeutics. Analysis of immune regulation in post chemotherapy cancer patients. PI: Farzaneh F. *Duration:* 2009/11. *Value:* £68K.

56. Leukaemia Research Fund (LRF). Investigation of the role of novel apoptosis regulator GAS5 in the development and therapy of leukaemia. PIs: GT Williams, F Farzaneh. *Duration: 2008/11. Value: £189K. Ref: LRF/08046*

57. Department of Health/NIHR (Experimental Cancer Medicine Centre). Phase-I Study of lentivirus transduced AML blasts expressing B7.1/IL-2, for immune gene therapy of poor prognosis AML. PIs: F Farzaneh & GJ Mufti. *Duration 2008/12. Value:* £550K.

58. Department of Health via the National Institute for Health Research (NIHR) comprehensive Biomedical Research Centre (BRC). Immune and immune gene therapy of haematological disorders. Postdoctoral fellowship awarded to Dr David Oppenheim to work under the supervision of Professor Farzin Farzaneh, Department of Haematological Medicine. *Duration: 2008/12. Value: £165K*

59. Department of Health via the National Institute for Health Research (NIHR) comprehensive Biomedical Research Centre (BRC). BRC Cell Therapy Programme. PI – Professor Mark Peakman. Co-investigators: Giovana Lombardi, Timothy Tree, Timothy, Diego Vergani, Adrian Hayday, Farzin Farzaneh, John Maher. *Duration: 2009/12. Value: £1,200K*

60. Roche Pharmaceuticals. Analysis of NK cell biology and induction of ADCC by glycoengineered antibodies. PIs: F Farzaneh & L Barber. *Duration:* 2009/12. *Value:* £450K.

61. Department of Health via the National Institute for Health Research (NIHR) comprehensive Biomedical Research Centre (BRC). BRC Cell Therapy Programme. PI: Farzin Farzaneh. *Duration: 2012/14. Value: £134K*

62. Roche Pharmaceuticals. Analysis of NK cell biology and induction of ADCC – Phase-II clinical studies. PIs: F Farzaneh & L Barber. *Duration:* 2010/14. *Value:* £904K.

63. Roche Pharmaceuticals. Analysis of NK cell biology and induction of ADCC – Phase-II clinical studies. PIs: F Farzaneh & L Barber. *Duration:* 2011/14. *Value:* £1,199K.

64. Leukaemia Lymphoma Research (programme grant number 10024). Immune dysregulation in bone marrow failure syndromes: implications for pathogenesis and clonal evolution. PI: GJ Mufti Co-PIs: F Farzaneh D Bonnet, J Marsh, NSB Thomas & S Kordasti. *Duration 12010/14. Value* £849K. Ref: LLR 10024.

65. Biotechnology and Biological Sciences Research Council (BBSRC). Development of an enhanced gene specific technology for the isolation of protein binding at a single locus in vivo. PIs: Kevin Ford, Farzin Farzaneh. *Duration: 2013 to 2014. Value: £120K.* Ref: BB/K013785/1

Current:

1. Department of Health/CRUK (Experimental Cancer Medicine Centre). GMP Facility Core Funding – 50% Contribution to Quality Managers's Salary. PI: Farzin Farzaneh. *Duration: 2012/17. Value £150K.*

2. Department of Health/NIHR. IOP/KCH Biomedical Research Centre (BRC) at Denmark Hill. GMP Facility Core Funding – Production and Quality Managers. PI: Farzin Farzaneh. *Duration: 2012/17. Value £450K.*

3. National Medical Research Council, Singapore. An immunisation strategy to prevent hepatocellular carcinoma. PIs: London Lucien Ooi, Hui Kam Man, Kanaga Sabapathy, Farzin Farzaneh, Philip Harrison, Alistair Noble. *Duration: 2012/15. Value: S$1,247K (Approx £600K).*

4. NIHR - National Institute For Health Research. NIHR Biomedical Research Centre. PIs: Afzali Khoshkbijari, B., Barker, J., Burchell, J., Cope, A., Corrigan, C., Dontu, G. Farzaneh F. et al. *Duration: 2012/17. Value: £7,167K.*
5. National Institute of Health – USA (NIH R21: AI099829-01A1). Efficacy/safety of CD80-IL-2 vs novel CD80-IL-15-IL-15Ra vector for leukemia vaccine. PI: Karin Gaensler, Co-Investigator: F Farzaneh. *Duration: 2013/15. Total Direct Costs: $275K*

6. Leukaemia Lymphoma Research (LLR – Programme Grant 13007). Pre-emptive immune therapy to prevent relapse of myeloid malignancies. PIs: Farzin Farzaneh & Linda Barber. Co-PIs: John Maher, Giovanna Lombardi, Ghulam Mufti, Antonio Pagliuca, CW Eric So, Michael Potter. *Duration: 2013/16. Value: £1,093K.* Ref: LLR 13007

7. Northwest Biotherapeutics (NWBT). DCVax for glioblastoma. PI: Farzin Farzaneh. *Duration 2013-2015. Value: £366K*

8. Leukemia & Lymphoma Society of America: Translational Research Program. Activation of multiple adjuvant pathways to improve AML vaccine efficacy. PI: Karin Gaensler. Co-Investigator: F Farzaneh*. Duration 2013/16. Total Direct Cot: $540K.*

9. Leukemia & Lymphoma Society of America: Translational Research Program. Activation of multiple adjuvant pathways to improve AML vaccine efficacy. PI: Karin Gaensler. Co-Investigator: F Farzaneh*. Duration 2013/16. Total Direct Cot: $540K.*

10. Cellectis. Manufacture of lentivirus vectors. PIs: F Farzaneh, L Chan. *Duration: 2014/15. Value: £800K.*

11. BBSRC/IB Catalyst. Large-scale lentiviral vector production. Collaborative project with UCL, ICH & NIBSC. PIs: M Pule, W Qasim, A Thrasher, M Collins, Y Takeuchi (UCL), F Farzaneh & Lucas Chan (KCL). *Duration 2015/18. Value: £4,500K (£731K at KCL). Ref:* BB/N003853/1

12. NIHR Invention for Innovation Programme (i4i). Next generation CAR19 studies. Collaborative project with UCL, ICH and UCH. PIs Martine Pule, Karl Peggs, David Linch and Paul Smith (UCL), Waseem Qaseem and Adrian Thrasher (ICH), Farzin Farzaneh (KCL), Mike Watts (UCH). *Duration 2015/2018. Value: 3,754K (£959K at KCL). Ref:* II-C3-0714-20005

13. Cognate/Northwest Biotherapeutics. Manufacture of DCVax for Phase-III glioblastoma clinical trial. PIs: F Farzaneh, L Chan, R. Prue. *Duration: 2015/16. Value: £2,600K* .

14. Cellectis. Manufacture of lentivirus vectors. PIs: F Farzaneh, L Chan. *Duration: 2015/16. Value: £900K.*

15. Autolus. Development of a novel procedure for the rapid manufacture of retroviral vectors. PIs F Farzaneh, L Chan and R Prue (>500K). Contracts and work packages with KCL for signature. *Duration 2015/18. Value: >£900K*

16. Cell Therapy Catapult. Development of viral vector industrialisation processes. PI: F Farzaneh *Duration 2015/17. Value: >£500K*

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