



Biomedical & Molecular Sciences Research MSc, MRes

Professor Stephen Sturzenbaum
Programme Director

Introduction

Thanks for your interest in our MSc / MRes in Biomedical and Molecular Sciences Research, a course that is intensive, educational, inspirational but crucially also fun! Should you join, you will be allocated a personal Tutor who will be offer advice and guidance throughout the year.

The programme is designed to offer training in theoretical and practical skills that are an integral part of a scientific research environment and prepare students for a research career. The course aims to introduce many modern practical approaches of biomedical and molecular sciences with a specific focus on biochemistry, genetics, molecular biology, cardiovascular biology and neurobiology. Arguably one of the most attractive features is that all students spend 6 months (MSc) or 9 months (MRes) in a research active laboratory to conduct a novel and cutting edge research project. Many students publish their work in scientific journals of international standard.

A recent survey concluded that over 90% of our past students have remained in Science with some 40-50 % progressing to do a PhD, Medicine or Dentistry. Our external examiner noted that "This course provides an ideal training for biomedical students hoping to pursue a career in research and sets a gold standard nationally in this area."

During the programme students will acquire skills in a wide range of general and specialist techniques that will include training in the extraction, isolation and analysis of nucleic acids and proteins, the cloning of genes, bacterial and mammalian cell culture, transfection and transduction, the use of antibodies and electron microscopy and imaging.

This booklet offers a snapshot of what to expect from the course.



Professor Stephen Sturzenbaum

Programme Director / Tutor / Admissions Tutor

Overall structure of the MSc/MRes Programme

To meet the criteria of *Bologna-compliance*, the two streams are defined as either a 12-month 90 ECTS MSc or a 16-month 120 ECTS MRes. Both courses are full time with no spring or summer holiday periods. Note: although no teaching activity is scheduled from mid-December to early January, you will be expected to revise for the January exam during this period.

Programme Objectives

At the end of the programme students will be able to:

- Evaluate and assimilate the scientific literature in a given subject area.
- Devise a hypothesis that can be tested experimentally.
- Analyse data, appreciate the value of reproducibility of data and draw valid conclusions.
- Collect data and apply appropriate methods to test a hypothesis.
- Develop an ability to comprehend and synthesise complex information.
- Organize a work-schedule, stick to deadlines, and prioritize activities.
- Communicate clearly and effectively, both orally and through writing.

The MSc/MRes is split into the following modules:

1. 7BBBM106 Advanced Laboratory Techniques in Biomedical and Molecular Sciences Research (30 credits)

- Molecular Biology Techniques (50%)
- Protein Purification (50%)

2. 7BBBM109 Topics in Biomedical and Molecular Sciences Research (30 credits)

- Genetics: written exam (20%)
- Biochemistry: Multiple Choice Questions (MCQ) and calculations (20%)
- Précis Paper (20%)
- January Exam (40%)

3. 7BBBM108 Specialised techniques workshops in Biomedical and Molecular Sciences (30 credits)

- >10 compulsory workshops (not assessed)
- 3 assessed workshops (100%)

4. 7BBBM112 Skills in Biomedical and Molecular Sciences (30 credits)

- Journal Club Presentation 1 (3%)
- Journal Club Presentation 2 (10%)
- Poster presentation (17%)
- Final oral presentation (20%)
- Laboratory (project) skill assessment (50%)

5. 7BBBM113 (MSc only) Research Dissertation (60 credits)

- Written dissertation (100%)

6. 7BBBM114 (MRes only) Research Dissertation (120 credits)

- Brevia paper (10%)
- Written dissertation (90%)

7BBBM106

Advanced Biosciences Research Laboratory Techniques

(30 credits)



Advanced Biosciences Research Laboratory Techniques

The aims of this module are:

- ➔ To develop the scientific and practical skills of the participating students.
- ➔ To develop the students' abilities to follow written instructions and carry out advanced experiments in biochemistry, molecular genetics and molecular biology and cell biology areas, and to describe, interpret and effectively present results and written reports.
- ➔ To train students to trouble-shoot, analyse results when experiments fail, and design investigative steps to determine sources of problems, and possible solutions to them.
- ➔ To train students to plan discussion for results and apply basic stats to data and express error levels.
- ➔ To train students in advanced biomedical techniques, required by typical biosciences researchers, and turn participants into highly competent laboratory workers.

By the end of the course students should be able to:

- ➔ Understand and follow written experimental instructions, identify key issues & prepare summaries for multi-step experimental procedures.
- ➔ Carry out advanced biochemistry and molecular biology experiments, analyse, present, and interpret results.
- ➔ Safely use instruments found in typical bioscience laboratories.
- ➔ Apply confidence criteria to their results including reproducibility and accuracy estimates.
- ➔ Prepare experimental reports of laboratory experiments.
- ➔ Prepare discussion material and be prepared to relate results to published material.
- ➔ Describe the outcome of work done and identify the key elements in a typical procedure.
- ➔ Collect data and apply statistical analysis methods.
- ➔ Identify safety issues in a laboratory environment.

Module structure

1) Molecular Biology Techniques

An extended laboratory practical 2 days a week (full-time) for 5 weeks.

2) Biochemistry Techniques

An extended laboratory practical 2 days a week (full-time) for 5 weeks.

Assessment

You will be required to complete several short and two larger laboratory reports. The exact form of these reports and assessment will be detailed by the academic, but typically will involve either a laboratory write-up or completion of a proforma and an experiment written in the format of a scientific paper.

7BBBM109

Topics in Biomedical Science

(30 credits)



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Topics in Biomedical Science

The aims of this module are:

- ➔ To provide an in-depth knowledge recent advances in a selected number of biomedicine and biosciences topics.
- ➔ To provide a comprehensive understanding of technical advances which underpin current research in biomedicine and biosciences.
- ➔ To enable students to search and prepare critical review material in specific topics.
- ➔ To broaden the general scientific interest of participants.

By the end of the course students should have:

- ➔ A consolidated knowledge of the key areas and recent developments in cardiovascular biology, neurobiology, genetics and biochemistry and molecular biology.
- ➔ An advanced knowledge in areas of current interest to biomedicine and biosciences.
- ➔ The ability to prepare and present critical reports on topics of interest.
- ➔ A critical awareness of current & emerging tools employed by researchers in biomedicine and the biosciences.

Module structure

You will attend over 30 lectures and tutorials in the following areas: Genetic Model organisms (e.g. yeast, nematodes, flies, mice, fish), Biochemistry (e.g. steroid receptor function and evolution, endocrine disruption and metallo-biochemistry), Cardiovascular Biology (e.g. regulation of blood flow, leukocyte-endothelial cell interactions and inflammation, growth of endothelium and blood vessels, and cellular and global mechanisms of heart failure), Molecular Biology (e.g. NMR, fluorescent proteins, RNA world and epigenetics) and Neurobiology (e.g. Neurobiology of pain, DNA microarray technology and pain research, Neurobiology of Depression, and fMRI and Depression). Note: lectures can change from year to year to include new advances and reflect the expertise of staff delivering the sessions.

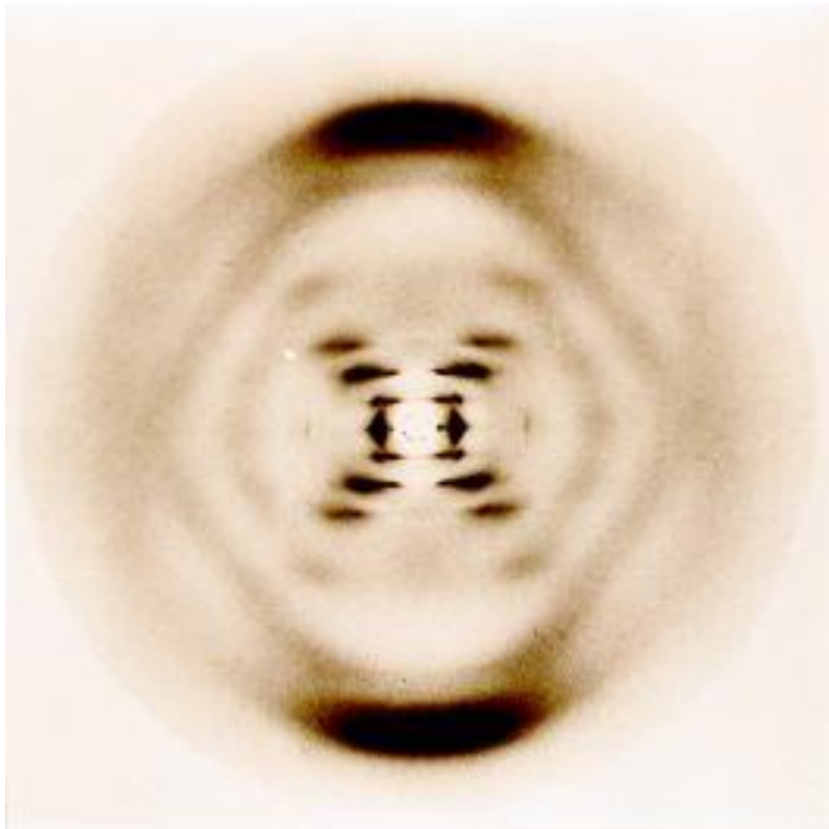
Module assessment

The module is primarily assessed by examination. You will sit four exams: a 1hr Genetics exam, a 1hr Biochemistry exam, a 2hr exam on Cardio Biology, Molecular Biology and Neurobiology and a Précis exam. The Biochemistry exam will include Multiple Choice Questions (MCQ) and calculations. For the Précis exam, you will be given a research paper to read and you will summarise the main points in a short (~300 word) précis. A workshop on précis writing will be held before the examination.

7BBBM108

Specialised techniques workshops in Biomedical and Molecular Sciences

(30 credits)



Specialised techniques workshops in Biomedical and Molecular Sciences

Specialized techniques workshops

The module aims to teach specialised technical skills in bioscience disciplines, relevant to research projects and aims to equip students with particular skills that cannot be easily taught, hands-on, in large classes: for example electron microscopy, mass spectrometry, microarray technology, *in situ* hybridization, *in vivo* electrophysiology, brain perfusion, real time PCR, and neuronal regeneration etc. These workshops are run by specialists, most are from the Faculty of Life Sciences and Medicine, and each workshop offers a detailed study of a research technique or concept designed to broaden your technical skills. You will gain a detailed grounding in techniques which you may want to use in your MSc/MRes research project and to make you competitive in your future scientific career. Students must attend three of these workshops. In addition to the specialized workshops students will attend >10 generalist workshops (e.g. statistics, bioinformatics, database searches, intellectual property and patenting, bioethics, risk assessments etc.). Note: workshops can change from year to year to incorporate new advances in the field and reflect the expertise of staff delivering the sessions.

Module Assessment

Students write a report on 3 workshops (approximately 2500 words plus figures, tables and references).

7BBBM112

Skills in Biomedical and Molecular Sciences Research

(30 credits)



Skills in Biomedical and Molecular Sciences Research

The module consists of developing presentation skills and laboratory performance competency necessary for a research career in biomedical sciences. In detail the module will:

1. Develop oral presentation skills via two journal club presentations and a final oral presentation of their research project.
2. Develop communication and visual presentation skills via an interactive poster session.
3. Develop laboratory skills within an active research environment.

By the end of the course students should have the ability to:

- present clearly their research via an oral presentation
- present clearly their research via a poster presentation
- critically discuss their research with other scientists
- time manage experimental design
- be technically competent and conduct independent research in the laboratory
- develop problem solving and trouble shooting skills.

Module Assessment

Journal Club Presentation

You will prepare two journal club presentations. For each session you will be expected to distil the relevant information into a 10 minute oral PowerPoint presentation to illustrate the major points.

Poster Presentation

You will be expected to make and present a poster based on your research project.

Final Oral Presentation

You will be expected to present a (short) PowerPoint presentation to provide an overview of your project followed by questions from internal and external examiners.

Laboratory (project) skill assessment

Your project supervisor will assess your skills as a laboratory scientist and will judge you on your attendance and reliability, technical and intellectual competence, contribution to the project and experimental design, progression towards independence in the lab and during the write-up-phase.

7BBBM113/4

Biomedical and Molecular Sciences Research Dissertation

(60/120 credits)



Biomedical and Molecular Sciences Research Dissertation

The module allows students to join a laboratory hosted by an experienced and leading researcher for a period of 6 months (MSc) or 9 months (MRes). The student will learn to develop skills in laboratory practice, designing and conducting experiments, collecting and analysing results, discussing the meaning of the data obtained, critically evaluating the data in terms of the broader picture of work in the area, organising time and managing a lab book on a day-to-day basis. The student will acquire deep knowledge through the reading of primary literature relevant to their research project. This will enable the student to compile a comprehensive written report of their research findings.

At the end of the project students should be able to:

- Design and carry out appropriate experiments to test hypotheses.
- Interpret results and summarise main findings.
- Carry out statistical analysis on data.
- Synthesise a large body of literature and in combination with the results acquired through independent research compile a large report consisting of abstract, introduction, materials and methods, results, discussion, conclusion and a correctly annotated bibliography.
- Present the report in a scientific format.
- Students should have developed research skills to a postgraduate standard.

Project Supervision

The project supervisor will spend time at the start of the project discussing the suggested topic, background reading, practical considerations, and timetabling.

The project supervisors will help in the following ways:

- encourage the student to plan the protocol and draw up the design of experiments.
- give assistance with learning how to calibrate, check and use equipment. You should understand the theory behind any apparatus used for your project work, not just its method of operation.
- give practical help initially during experiments, but thereafter encourage the student to work independently as much as possible.
- provide overall supervision of the student's work, with particular attention to regulations and safety.
- give guidance on analysis and presentation of data and on the most appropriate statistical tests for the data generated.

Module Assessment













The total length of the dissertation should be 11,000 – 15,000 (MSc) or up to 25,000 (MRes). MRes students are expected to produce an additional short paper (Brevia) mid-way through the project.

Students are typically offered a choice of 60-80 projects. These change from year to year to make full use of new advances and to reflect the expertise of laboratory heads. Examples of previous projects include:

Detection of leukaemia immunity after haematopoietic stem cell transplantation
Hormonal control Zn signalling in epithelial cells
Gene regulation in CHARGE syndrome
Epigenetic programming of endothelial dysfunction in gestational diabetes
Evaluation of a role of MTAP in the pathogenesis of cutaneous T-cell lymphoma
Resolution of pulmonary arterial hypertension (PAH) by small molecule reagents
Functional mapping of gene deserts in inflammatory bowel disease
A study of neutrophil intracellular cytokine production in patients with acute and chronic liver failure with the goal of improving long term patients' care
Reverse genetic characterisation of a novel gene family: from defining function to proposing a new nomenclature
Nanotechnology and improving drug delivery at the blood-brain barrier
Development of anti-fibrotic drugs from Chinese Herbs
Insulin signalling in neural differentiation and proliferation
Identifying novel antibiotic targets for the treatment of <i>Pseudomonas</i> infections in children
Role of the Wiskott Aldrich Syndrome protein (WASP) in Chronic Myeloid Leukemia (CML)
Structural characterisation of Ataxin-1, a protein implicated in neurodegeneration
Connecting metabolism and immunity in <i>Drosophila</i>
The role of mitochondrial function in neuropathic pain
mechanisms of class switching to IgE in human B cells
Identifying Odz3 domains important for axon pathfinding and cell-cell interactions.
Tropical UV- tolerant bacteria of the Great Barrier Reef provide a human mitochondrial model for improved metabolic health and cancer protection
Providing insights into Parkinson's disease via identifying proteins that control toxicity of alpha-synuclein
Metallomics and signal transduction
Identification of an inhibitor of ZAG's fatty acid binding function
structure function studies of the p53 tumor suppressor family of proteins
The role of T-bet and Gata3 target genes during T helper cell differentiation
Role of eotaxin-1, 2 and 3 in airway smooth muscle motility in asthma.
Nano-encapsulation of islet cells for improving cellular delivery of Insulin in diabetes
Confirmation of novel genes which mediate thrombus resolution
Mechanism of HBCD- induced Zn ²⁺ signalling events in neuronal cells.
Regulation of neuronal maturation by the RNA processing protein SFPQ
Quantification of lipid transporter expression in endothelial cells from pre-eclamptic pregnancies
Regulation of intestinal fructose transport by artificial sweeteners in vitro

**Examples of published outputs from
Biomedical and Molecular Sciences Research MSc/MRes students
(underlined names are students from the course)**

	Imanikia S, <u>Galea E</u> , Nagy E, Phillips DH, Stürzenbaum SR, Arlt VM. (2016). The application of the comet assay to assess the genotoxicity of environmental pollutants in the nematode <i>Caenorhabditis elegans</i> . <i>Environ Toxicol Pharmacol.</i> 45:356-61.
	<u>Zahid H</u> , Miah L, Lau AM, Brochard L, <u>Hati D</u> , Bui TTT, Drake AF, Gor J, Perkins SJ and McDermott LC (2015). Zinc-induced oligomerisation of zinc alpha2 glycoprotein reveals multiple fatty acid binding sites. <i>Biochem. J.</i> in press.
	Schlomann, Koller, Conrad, <u>Ferdous</u> , <u>Golfi</u> , <u>Molejon Garcia</u> , Höfling, Parsons, Costa, Soper, Bossard, Hagemann, Roshani, Sewald, Ketchem, Moss, Rasmussen, Miller, Lauffenburger, Tuveson, Nimsky, Bartsch (2015). ADAM8 as a drug target in pancreatic cancer. <i>Nature Commun.</i> 6, 6175.
	Shi Q, Frei E, Stiborova M, van Schooten FJ, Phillips DH, Spina D. (2015). Pulmonary inflammation impacts on CYP1A1-mediated respiratory tract DNA damage induced by the carcinogenic air pollutant benzo[a]pyrene. <i>Toxicol Sci.</i> 146(2):213-25.
	Southgate, Sukalo, Karountzos, Taylor, <u>Collinson</u> , Ruddy, Snape, Dallapiccola, Tolmie, Joss, Brancati, Digilio, Graul-Neumann, Salviati, Coerd, Jacquemin, Wuyts, Zenker, Machado, Trembath (2015). Haploinsufficiency of the NOTCH1 Receptor as a Cause of Adams-Oliver Syndrome with Variable Cardiac Anomalies (in press). doi: 10.1161/CIRCGENETICS.115.001086
	Avet-Rochex A, Carvajal N, Christoforou CP, Yeung K, <u>Maierbrugger KT</u> , Hobbs C, Lalli G, Cagin U, Plachot C, McNeill H, Bateman JM (2014). Unkempt is negatively regulated by mTOR and uncouples neuronal differentiation from growth control. <i>PLoS Genet.</i> 10(9):e1004624.
	Avet-Rochex A, <u>Maierbrugger KT</u> , Bateman JM (2014). Glial enriched gene expression profiling identifies novel factors regulating the proliferation of specific glial subtypes in the Drosophila brain. <i>Gene Expr. Patterns</i> 16(1):61-68.
	Viswanathan P, Gaskell T, Moens N, Culley OJ, Hansen D, <u>Gervasio MKR</u> , Yeap YJ and Danovi D (2014). Human pluripotent stem cells on artificial microenvironments: a high content perspective. <i>Front. Pharmacol.</i> , 5:150.
	Krais AM, Mühlbauer KR, Kucab JE, <u>Chinbuah H</u> , Cornelius MG, Wei QX, Hollstein M, Phillips DH, Arlt VM, Schmeiser HH (2014). Comparison of the metabolic activation of environmental carcinogens in the mouse embryonic stem cells and mouse embryonic fibroblasts. <i>Toxicol In Vitro.</i> 29(1):34-43.
	Zhai C, <u>Li Y</u> , Mascarenhas C, Lin Q, Li K, Vyrides I, Grant CM, Panaretou B (2014). The function of ORAOV1/LTO1, a gene that is overexpressed frequently in cancer: essential roles in the function and biogenesis of the ribosome. <i>Oncogene</i> 33(4):484-494.
	<u>Tariq A</u> , Mahroo OA, Williams KM, Liew SH, Beatty S, Gilbert CE, Van Kuijk FJ, Hammond CJ (2014). The heritability of the ring-like distribution of macular pigment assessed in a twin study. <i>Invest Ophthalmol Vis Sci.</i> 55(4):2214-2219.
	<u>Gatt AP</u> , Jones EL, Francis PT, Ballard C, Bateman JM (2013). Association of a polymorphism in mitochondrial transcription factor A (TFAM) with Parkinson's disease dementia but not dementia with Lewy bodies. <i>Neuroscience Letters</i> 557:177-180.
	Kumar AA, <u>Hati D</u> , Thaker TH, Miah, Cunningham P, Domene C., Bui TTT, Drake AF, McDermott LC (2013). Strong and weak zinc binding sites in human zinc-a2-glycoprotein. <i>Febs Letts</i> 587 (2013) 3949–3954.
	Abbate V, Liang W., Patel J, Lan Y, Capriotti L, Iacobucci V, Bui TT, <u>Chaudhuri P</u> , Kudsiova L, Vermeer LS, Chan PFL, Kong X, Drake AF, Lam JKW, Bansal SS, Mason AJ (2013). Manipulating the pH response of 2,3-diaminopropionic acid rich peptides to mediate highly effective gene silencing with low-toxicity. <i>Journal of Controlled Release</i> 172(3):929-938.

	Yu T, Meiners LC, Danielsen K , Wong TY, Bowler T, Reinberg D, Scambler PJ, van Ravenswaaij CMA, Basson MA (2013). Deregulated FGF and homeotic gene expression underlies cerebellar vermis hypoplasia in CHARGE syndrome. <i>eLife</i> 2:e01305.
	Chisnall B, Johnson C, Kulaberoglu Y , Chen YW (2013). Insoluble protein purification with sarkosyl: facts and precautions. <i>Methods in Molecular Biology: Structural Genomics: General Applications</i> . 1091:179-186.
	Clark RI, Tan SWS , Péan C, Roostalu U, Vivancos V, Bronda K, Pilátová M, Fu J, Walker DW, Berdeaux R, Geissmann F, Dionne MS (2013). MEF2 is an in vivo immune-metabolic switch. <i>Cell</i> 155: 435-447.
	Gaur A , Collins H, Wulaningsih W, Holmberg L, Garmo H, Hammar N, Walldius G, Jungner I, Van Hemelrijck M. Iron metabolism and risk of cancer in the Swedish AMORIS study (2013). <i>Cancer Causes and Control</i> 24(7):1393-1402.
	Wang Y , Blanco-Andujar C, Zhi ZL, So PW, Thanh NTK, Pickup JC (2013). Multilayer nanocoatings incorporating superparamagnetic nanoparticles for tracking of pancreatic islet transp with magnetic resonance imaging. <i>Chem Comm</i> 49, 7255-7257.
	Avet-Rochex A, Kaul AK, Gatt AP , McNeill H, Bateman JM (2012). Concerted control of gliogenesis by InR/TOR and FGF signalling in the <i>Drosophila</i> post-embryonic brain. <i>Development</i> . 139(15), 2763-2772.
	Wilson M , Hogstrand C, Maret W. (2012). Picomolar concentrations of free zinc(II) ions regulate receptor protein-tyrosine phosphatase β activity. <i>J Biol Chem</i> 287(12), 9322-9326.
	Kanhere A, Hertweck A, Bhatia U , Gökmen MR, Perucha E, Jackson I, Lord GM, Jenner RG (2012). T-bet and GATA3 orchestrate Th1 and Th2 differentiation through lineage-specific targeting of distal regulatory elements. <i>Nat Commun</i> 3,1268. IF(2012): 10.0
	Lam JKW, Liang W, Lan Y, Chaudhuri P , Chow MYT, Witt K, Kudsiova L, Mason AJ (2012). Effective endogenous gene silencing mediated by pH responsive peptides proceeds via multiple pathways. <i>Journal of Controlled Release</i> , 158(2)2, 293-303.
	Taylor NJ, Nishtala A , Manakkat Vijay GK , Abeles RD, Auzinger G, Bernal W, Ma Y, Wendon JA, Shawcross DL (2013) Circulating neutrophil dysfunction in acute liver failure. <i>Hepatology</i> . 57(3):1142-1152.
	Bhaiji T , Zhi ZL, Pickup JC (2012). Improving cellular function and immune protection via layer nano-coating of b-cell spheroids co-cultured with mesenchymal stem cells. <i>J Biomed Mater R</i> 100, 1628-1636.
	Xu Q, Wong YF, Qu S , Kong Q , Zhang XL, Liang XM, Hu Q, Noor M, Hendry BM. Knowledge-based discovery of anti-fibrotic and pro-fibrotic activities from Chinese materia medica. In Kuang X, ed. Recent Advances in Theories and Practice of Chinese Medicine, Intech, 2012, pp337-352. ISBN 978-953-307-695-9.

Testimonials

Ambreen: “I believe applying for the Biomedical & Molecular Sciences Research MSc course was one of the best choices I have made and I highly recommend this course. The course has enabled me to learn so much in just one year. I have gained new theoretical knowledge about biomedical research through the lectures and tutorials, and the practical aspects of the course have enabled me to develop my laboratory skills further. I am now much more confident when working in a research laboratory. One of the main aspects of this course was the ample opportunity to develop my presentation skills, through various journal clubs and other presentations, therefore helping me to become more confident when speaking in public and presenting my work. The 6 month research project allows firsthand experience of what a career in research entails. The projects offered are exciting and inspiring, allowing the further development of skills such as independent and team work, time management and scientific communication. Coming back to studying after working was very daunting at first, as I thought it would be difficult to get back into the routine of studying. However, due to the amazing support I received from the course supervisors and teaching staff I found the transition very easy. The course directors were very approachable, patient and eager to

help, offering helpful advice whenever it was required. I found King's to be an excellent institution which certainly lives up to its expectations. The university has a great mix of students and staff from a wide range of multicultural backgrounds. I have met some great people here from all over the world. London is by far the best place to study for a world class education and an even better social life! There is something here for everybody."

Jamila: "Having studied my undergraduate degree at King's College London, I was well aware of the high calibre of teaching and its renowned reputation in research. It was one of the main reasons I applied for their MSc in Biomedical and Molecular Science Research. The course allowed me to sample different topics through lectures and practical workshops whilst developing my lab skills in various biological techniques. The best part of this course was the 6 month research project in a current lab where I learnt new techniques, devised my own experiments and became progressively independent in the lab. The course co-ordinators, the entire Randall Division and the staff in the zebrafish facility were all extremely friendly, incredibly helpful and very supportive. This course has provided me with the skills and experience I need to pursue a career in research and I would most definitely recommend it."

Shoaib: "I applied to King's College London because of its reputation as a centre of world-leading biomedical research and excellence in education. The MSc in Biomedical and Molecular Sciences Research incorporates a broad curriculum providing an insight into the biomedical sciences and training in a wide array of laboratory research techniques through specialist workshops and supervised practical classes. The programme also provides the fantastic opportunity to learn from pioneering scientists through an intensive six-month research project. The quality of teaching on the course has been extraordinary, and students can expect excellent support and professional guidance throughout the course and when applying for further study or jobs. The MSc course at King's has been a deeply rewarding experience, enabling me to develop in a personal capacity and further enhancing my scientific and professional skills. The opportunity to live in London, make new friends and study at a renowned institution has made this a remarkable year."

Ying: "The MSc in Biomedical and Molecular Sciences Research at King's College London propelled me into the world of the most advanced technologies. The design of this course offered a brilliant transition from undergraduate to postgraduate studies. The six-month project improved my scientific skills and taught me independence in the lab and was an ideal preparation for PhD level research. The supervision and guidance from the course coordinators and the support I received from the Renal Science Group and especially my project supervisor was the highlight of the MSc course - their scientific aptitude and rigorous scholarship was inspirational!"

Gladio: "Coming from a different country and a very different academic background, I must admit I was quite daunted by the perspective of coming to study Biomedical Sciences in London, leaving home, family and friends behind for one whole year. King's College has, however, repaid in full all my wishes and expectations, as I have been immersed in a stimulating, enthusiastic and positively challenging environment. The Biomedical and Molecular Sciences Research MSc provides teaching in several core topics related to biomedical sciences, as well as training in various laboratory techniques, with a special focus on the practical aspect of research and many opportunities of hands-on experience. The highlight of the course is definitely the six-month research project, as it offers a unique opportunity to dive into laboratory life, working side by side with a supervisor and a team of scientists. The teaching staff in the course is simply extraordinary. Above possessing an admirable level of knowledge and experience in their respective fields, lecturers and tutors are kind, patient, considerate and display amazing didactic abilities, providing each student with individual help and assistance. The overall feeling is that teachers are in such position because they know how to do their job very well. I would say that the time I spent at King's gave me much more than what can be summarized in a course overview. The objective of the course is not to provide insight in every

possible laboratory technique, but to give the student the ability to grow, learn and self-improve – both as a scientist and as an individual. Together with a lively city, many new friends and lots of great opportunities, I really feel like saying that this year in King’s College has made the time of my life.”

Fran: “I applied for the MSc in Biomedical and Molecular Sciences Research knowing that I wanted to become a PhD student in the near future, and hoping that the large range of topics and skills covered within this MSc would make me an attractive candidate for a PhD. The MSc BMSR was everything I hoped it would be - the course provided many opportunities to improve my presenting and oral skills which were invaluable during interviews, but the wide range of topics covered in each module meant I had the confidence to apply for projects in research areas that hadn't been a part of my BSc degree. The 6-month project then taught me how to work productively in a busy and professional research lab, where I also learned dozens of new skills and techniques. I can confidently say that this course has made me a far better and more well-rounded student than when I arrived, and without it I doubt I would be going on to start my PhD in September.”

Lucia: “The MSc in Biomedical and Molecular Sciences Research at King’s College London has lived up to my expectations and gone beyond them. As I come from Spain, this was a completely different learning method to the one I was used to; nevertheless I have enjoyed the course and learnt a lot from it. The course covers a wide variety of topics where students are given enough resources and guidance but are also allowed enough independence to do research on their own and focus on the aspects that they like the most. It also offers a large number of workshops to choose from, which improved my scientific writing and other essential skills. The fact that there are people from different backgrounds in this course is a great opportunity to help each other out and to learn new things in a more interactive way. I can definitely say that I learnt a lot from revising with friends that had studied different BScs and in different countries. Furthermore, the research projects in active and enthusiastic labs offer a great experience with cutting edge facilities and techniques. I have learnt a lot, not only from planning and doing my own experiments but also in all the lab meetings and centre’s seminars.”

Akerke: “The MSc BMSR program contributed to my formation as a person: I realized my potential, met amazing, very intelligent and welcoming classmates, had an opportunity to study with very engaged professors and fell in love with science. At King’s the possibilities are endless.”

Elisabeth: “The BMSR course is an absolutely great opportunity to expand your knowledge and experience in a range of scientific fields. It provides the ideal environment to hone one’s skills in the laboratory surrounded by excellent and experienced staff who are leading researchers in their field.”

Anncharlott: “I gained insight into a broad variety of scientific subjects, not only regarding theoretical knowledge, but also practical work. I experienced amazing teaching on this course with well-chosen and organized modules. All this contributed to the awesome time I’ve had at King’s over the past year.”

Vibha: “The programme provides a lot of practical knowledge. There is ample help and guidance available from the professors who are always ready to help. The coursework, despite being intense, helps a lot in terms of practice and acquiring new skills”.

Mengjia: “I joined the Biomedical and Molecular Sciences Research MSc due to the outstanding reputation and central location of King’s. The lectures and tutorials helped me understand the concept and structure of Biomedical Sciences, to overcome my weaknesses and develop my strengths. The workshops explored various advanced techniques and the lab class laid a solid foundation for my 6 month research project. Another asset of the course was the journal club and presentation module which turned me into a more confident person and taught me how best to

present my research in a scientific and logical manner. My project was based in the Randall Division which further developed my laboratory skills and fostered independent thinking. Overall, this 1-year MSc allowed me to realize my full potential and I am certain that everyone on this course benefitted in some way from the wonderful teaching environment.”

Adolfo: “King’s College London is, in my opinion, an excellent University that is well positioned (nationally and globally) within the field of scientific research. King’s has been my alma mater for four years during which I was awarded a Bachelor of Science in Biochemistry and a Master of Science in Biomedical and Molecular Sciences Research. I benefitted tremendously from joining the MSc course: I was able to expand my scientific knowledge through the combination of lectures, supervised practical lab classes and the introduction to high-end procedures and techniques. The “piece de resistance” was undoubtedly the extensive research project which was based in a dynamic research active lab. The gained expertise has since allowed me to pursue a funded PhD within the Cancer research field at the Spanish research centre “Centro de Biología Molecular Severo Ochoa”. I certainly believe that the Masters course has been, to date, one of the best and most influential decisions of my research career and I can only recommend this course. King’s does not only offer excellent academic training, but is also a great place to meet people and socialise – the campus is located in central London and is a mere 5 minute walk to the river Thames!”