University of Sheffield

Programme Specification

This specification provides a summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided.

The content of our courses is reviewed annually to make sure it's up-to-date and relevant. Individual modules are occasionally updated or withdrawn. This is in response to discoveries through our world-leading research; funding changes; professional accreditation requirements; student or employer feedback; outcomes of reviews; and variations in staff or student numbers. In the event of any change we will inform students and take reasonable steps to minimise disruption.

Programme Details

1. Programme title	Advanced Cell & Gene Therapies		
2. Award type	Master of Science		
3. Programme details	**FHEQ Level:** 7	**Mode of Study:** Full time Part time	**Duration:** 1 year 2 years
4. Faculty	Faculty of Health		
5. School	**Owning:** School of Medicine and Population Health		
6. Accrediting Professional or Statutory Body	None		
7. HECoS code *Select between one and three codes from the HECoS vocabulary.*	**Code:** 101378 **Percentage:** 50	**Code:** 100899 **Percentage:** 50	**Code:** **Percentage:**
Programme code(s) (internal use)	SMPT059 (Full time) SMPT069 (Part time)		

9. Programme aims

The overall aim of the programme is to train students to become creative analytical thinkers familiar with both basic and clinical aspects of advanced cell & gene therapies, while developing the professional skills needed to work in translational research in the biologics-based treatment sector. The curriculum is designed to allow students to gain:	
A1	An in-depth understanding of the principles of gene and cell therapeutics.
A2	Develop essential skills and training for each step of clinical development of advanced therapy products: e.g. discovery, vector design, GLP pre-clinical regulatory studies, GMP manufacturing and analytical processes, clinical design and market authorisation.
A3	Address the shortage of skills and training in this area.
A4	The ability to critically appraise and analyse scientific literature encompassing both clinical and laboratory-based studies so as to judge and interpret findings.
A5	Ability to synthesise information from a variety of sources to construct coherent opinions and arguments.
A6	Critical awareness of the ethical and legal frameworks governing studies with genetically modified organisms, human participants and experimental animals.
A7	Capability to learn independently and with peers as part of a commitment to lifelong learning and professional development.
A8	Proficiency in engaging and communicating with diverse communities including lay public, peers and professionals involved in research and clinical practice.
A9	Ability to evaluate the potential of new and advanced therapies for translation to the clinic.
A10	An ability to apply analytical and synthetic skills to formulation of new hypotheses.

10. Programme learning outcomes

Knowledge and understanding (K) (MSc K1-6, PGDip K1-5; PGCert K1-4): On successful completion of the programme, students will be able to demonstrate knowledge and understanding of:	
K1	Use detailed knowledge in gene and cell therapeutics and potential applications in monogenic rare diseases.
K2	Apply advanced knowledge in translational path for advanced therapies, including clinical development, GMP manufacturing and regulatory approvals for clinical trials.
K3	Design novel experimental strategies based on current knowledge of genetic factors contributing to human disorders.
K4	Judge the relevance of viral vectors, cell type and animal models to develop treatment for rare disease.
K5	Critique and assess the overall landscape of advanced therapies including current challenges.

K6	Design workflows for development of advanced therapies involving academic-industrial partnerships.
Skills and other attributes (S) (MSc S1-8, PGDip S1-7; PGCert S1-7): *When considering the skills and attributes developed in this programme, please refer to the Sheffield Graduate attributes (SGAs). SGAs can be found here* On successful completion of the programme, students will be able to:	
S1	Show ability to retrieve, critically analyse, synthesise and summarise published data from multiple sources, including those which present conflicting data.
S2	Demonstrate independent thought and judgement in relation to critical analysis of scientific literature.
S3	Effectively communicate information using appropriate media to peers and the general public.
S4	Work both independently and collaboratively in an effective manner to deadlines.
S5	Judge research utilising experimental animal models of disease for adherence to the principles of the 3Rs (reduction, refinement and replacement).
S6	Appraise clinical studies for compliance with national statutory requirements, such as the Human Tissue Act 2004, and local ethical guidelines.
S7	Develop ideas and judgements regarding the development of new gene and cell therapeutics through critical evaluation of appropriate literature, concepts and principles.
S8	Develop competitive practical skills to enable a career in industry and academia.

11. Learning and teaching methods *(this should include a summary of methods used throughout the programme, including any unique features and should be written with a student focus as this information will display to current students and applicants i.e. prospectus)*

Development of the learning outcomes is promoted through the following teaching and learning methods:

The Division of Neuroscience has a proven track record in delivering postgraduate taught programmes which foster an environment with multiple opportunities for individual and group learning. However, the primary responsibility for learning lies with the student, who must be organised and self-motivated to make the most of the programme.

Diverse learning and teaching methods will be used to account for variation in learning styles and maintaining student engagement. Face-to-face learning will be the main mode of delivery. Learning activities will require students to acquire knowledge, both through reading and discussion; investigate topics, both individually and collaboratively; present work using posters and slide presentations; and produce written pieces of work. Students will produce reflective and critical written assignments, posters (both formatively in groups and individually for summative assessment), and presentations to develop communication skills. Scientific as well as lay writing skills will be developed. Learners will be trained using various platforms: i) F2F lectures with academic and industry experts in advanced therapies; ii) practical sessions in academic labs; iii) tutorials provided by experts in this area; v) opportunity to attend the Annual British Gene & Cell Therapy Conference (available through divisional funding).

Feedback and contact time will be essential for student progression through the programme. Contact time will be provided through lectures, tutorials, discussion round table forums and individual correspondence as

and when required and specific tutorials and discussion sessions will allow students to reflect on their learning. MCQs will also be used to provide feedback on knowledge acquisition. Individual responses to incorrect answers can be tailored to provide hints and constructive feedback, rather than just labelling an answer as incorrect. Peer assessment of formative exercises will be used throughout the programme for enhanced feedback.

12. Assessment and feedback methods *(this should include the range of types of methods used and should be written with a student focus as this information will display to current students and applicants i.e. prospectus)*

Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:

Overall, we use a wide range of assessment methods to measure student knowledge and understanding, including exams, essays, blog articles, posters and oral presentations. The formative assessments are used to encourage group work and/or for students to obtain individual feedback ahead of summative assessments. For example, on SMP4135 (Introduction to Inherited Diseases) students are asked to individually write a paragraph about the genetics of an inherited disease in lay terms prior to writing a blog article as part of their summative assessment (K3, S2, S3)

Summative assessments require students to demonstrate an in-depth knowledge of advanced therapies areas offered by the course: For example, on SMP4136 Principles of Gene Therapy (15 credits) short answer questions in an exam ensure their basic understanding, along with two longer questions on the use of cell and gene therapies to assess the depth of understanding (K1, K2, K4, S1). In SMP4203, Clinical Development in Gene & Cell Therapeutics (30 credits), the students write a 3000-word critical assessment and present a poster on the regulatory, ethical and safety consideration, challenges and successes of advanced therapies (**K2, K5, S7**). Students will demonstrate their knowledge of both gene and cell therapeutics over the two assessments.

Version Number:	**Purpose / Change:**	**Cohort affected: (academic year and level)**	**Date change approved:**
1			November 2023
2			December 2025

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