



**QMI annual report**

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| <b>Outcome requested:</b>  | Finance and Investment Committee is asked to <b>consider</b> the QMI annual report for 2022/23.  |
| <b>Executive Summary:</b>  | <p>QMI's strategic goals are to deliver the <i>QMUL Strategy 2030</i> ambitions for the commercialisation of research. The <i>Strategy 2030</i> aims to embed a culture at Queen Mary where impact, innovation and engagement are an innate part of all research activity, to maximize its impact in order to enhance our global reputation. Specifically, the aim is to become a UK leader in the measurable impact of licences and spinouts from our research community.</p> <p>This report highlights the in-year commercial outputs relating to the performance of QMUL's spinout portfolio, licensing of technology to industry and development of the innovation pipeline to maximise long-term success.</p> <p>The highlight of key outputs for the year are:</p> <ul style="list-style-type: none"> <li>• Research commercialisation KPIs would rank QMUL's 2022/23 performance predominately in 8<sup>th</sup>/9<sup>th</sup> position out of 17 when compared to the 2021/22 performance of other HEIs within KEF's Cluster V across a number of benchmarking criteria.</li> <li>• 4 new spinouts established: AeroSolar Limited; PryFiber Limited; RoEx Limited; and Tabletop R&amp;D Limited.</li> <li>• A portfolio of 24 active spinout companies with QMUL's aggregated shareholdings valued at over £3.4 million at the year end.</li> <li>• £0.3million raised from the disposal of shares in spinouts (2021/22 £0.8m).</li> <li>• 24 new commercial agreements in the year (2021/22: 29).</li> <li>• £1.9m of licence income received (2021/22: £2.1m).</li> <li>• 93 new invention disclosures recorded and evaluated (2021/22: 71).</li> </ul> |
| <b>QMUL Strategy: strategic aim reference and sub-strategies [e.g., SA1.1]</b> | Research and Innovation  |
| <b>Internal/External regulatory/statutory reference points:</b>                | Strategy 2030<br>UKRI  |
| <b>Strategic Risks:</b>  | Research Income<br>Research Quality  |
| <b>Equality Assessment:</b> <b>Impact</b>                                      | N/A  |

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|--|---|
| <b>Subject to prior and onward consideration by:</b> | None  |
| <b>Confidential paper under FOIA/DPA</b>             | No  |
| <b>Timing:</b>                                       | Annual report to the Committee  |
| <b>Author:</b>                                       | Dr Phil Clare, QMI CEO  |
| <b>Date:</b>   | 29/02/2024  |
| <b>Senior Management/External Sponsor</b>            | Professor Andrew Livingston, Vice-Principal (Research and Innovation) |





# Queen Mary Innovation Limited Annual Research Commercialisation Report 2022/23

## 1. CEO's Statement

I joined QMI in October 2022 and I am pleased to report on the progress made by the company in the first ten months of my tenure.

The early focus was on meeting senior members of the University and academics to understand the opportunities emerging from different sources (and the ambition to generate more). The QMI team has evolved to meet the growing ambitions of QMUL.

Key areas for activity growth are:

- Disclosures
- Access to funding (pre- and post-commercialisation)
- Support for project acceleration (pre- and post-commercialisation)
- Innovation ecosystem growth
- Inter-institutional collaboration
- Communications

### Disclosures

- QMI has created new entry level positions in both the existing teams of Tech & Eng and Biopharma and appointed a new commercialisation manager to source and support projects from HSS.
- An increased events programme is planned to increase academic contact opportunities.

### Access to funding (pre- and post-commercialisation)

- QMI have worked with the Impact team to review and improve the Impact Fund process to accelerate access to critical translational funding for projects at the earliest stages.
- We have raised our profile with early stage investors, looking to broaden access to capital and increase the number of expert eyes steering our projects.
- Relationships with corporate partners such as Evotec and BMS were developed (and signed in 23-24) to access capital and expertise for early stage biotech.
- Collaborations with other institutions are being explored to facilitate capital-raising.
- Overall we are seeking to improve access to capital at every stage of the process.

### Support for project acceleration (pre- and post-commercialisation)

- Planning to increase the network of experts and CEOs that can take forward new spinouts more quickly, investing in accelerating the most promising.
- Improving contact with existing spinout companies to maintain a connection beyond spinout.

## Innovation Ecosystem Growth

- Support the growth of the Whitechapel Life Sciences Quarter.
- Support the appointment of an Associate Director of Entrepreneurship in the University who, alongside the hoped for investment in the SMB Entrepreneurship hub, will build the entrepreneurial culture we need.

## Inter-institutional collaboration

- Working with UCL and other universities we successfully bid for £1.5m to support the London Social Venture Fund project. This began in December 2023.
- Exploring collaborative capital raising with other London universities is ongoing.

## Communications

- Revised website, social media presence (with a focus on LinkedIn for promoting successes and marketing opportunities), professional public announcements and press-releases as well as development of better content for promoting Innovation as QMUL.

This is just the beginning and it will take time for these initiatives to feed through into an increasing flow of companies and licences, as a prelude for our innovations and ventures eventually making an economic and social impact.

The highlight of key outputs for the year are:

- Research commercialisation KPIs would rank QMUL's 2022/23 performance predominately in 8<sup>th</sup>/9<sup>th</sup> position out of 17 when compared to the 2021/22 performance of other HEIs within KEF's Cluster V across a number of benchmarking criteria.
- 4 new spinouts established: AeroSolar Limited; PryFiber Limited; RoEx Limited; and Tabletop R&D Limited.
- A portfolio of 24 active spinout companies with QMUL's aggregated shareholdings valued at over £3.4 million at the year end.
- £0.3million raised from the disposal of shares in spinouts (2021/22 £0.8m).
- 24 new commercial agreements in the year (2021/22: 29).
- £1.9m of licence income received (2021/22: £2.1m).
- 93 new invention disclosures recorded and evaluated (2021/22: 71).

## **2. Introduction**

QMI's strategic goals are to deliver the *QMUL Strategy 2030* ambitions for the commercialisation of research. The *Strategy 2030* aims to embed a culture at Queen Mary where impact, innovation and engagement are an innate part of all research activity, to maximize its impact in order to enhance our global reputation. Specifically, the aim is to become a UK leader in the measurable impact of licences and spinouts from our research community.

This report highlights the in-year commercial outputs relating to the performance of QMUL's spinout portfolio, licensing of technology to industry and development of the innovation pipeline to maximise long-term success.

Performance was benchmarked against a fixed set of UK HEIs that are within QMUL's direct peer group ("Cluster V") under the Knowledge Exchange Framework (KEF). HEIs in Cluster V are large, high research intensive and broad-discipline HEIs undertaking significant amounts of world-leading research in clinical medicine and STEM. The comparative data used is obtained from the most recent HE-Business and Community Interactions (HE-BCI) survey available (2021/22) against which QMUL's relative performance can be benchmarked. To guide the benchmarking, QMUL's research income for 2022/23 would rank 12<sup>th</sup> within Cluster V based on Research Grants and Contracts reported in the respective HEI's 2021/22 financial statements.

## 2.1. Creating new QMUL Spinout Companies

### Approach

QMI works closely with academic spinout founders, managing the spinout process from early invention discovery, evaluation, development, validation, business planning, financing and formation of the company. QMI seeks investment from venture capitalist, individuals and other funding bodies.

### Performance

| Spinouts created | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 |
|------------------|---------|---------|---------|---------|---------|
| Target           | 1       | 1       | 2       | 2       | 2       |
| Actual           | 2       | 2       | 3       | 4       | 4       |

Four new spinout companies were established in the year. The creation of spinouts is more labour intensive than licensing and targeting 2/3 spinouts a year aligns with resources and pipeline.

*AeroSolar Limited*, formed by Prof Joe Briscoe [School of School of Engineering and Materials Science], improving solar cell efficiency.

*PryFiber Limited*, formed by Dr Lei Su [School of Engineering and Materials Science], utilising optical fibre for precision procedures.

*RoEx Limited*, formed by Professor Josh Reiss [School of Electronic Engineering and Computer Science], AI for audio production.

*Tabletop R&D Limited*, formed by Dr Diego Perez-Liebana [School of Electronic Engineering and Computer Science], using Computational Intelligence in designing tabletop board games.

### Benchmarking

The following table set out the number of new spinouts created in 2021/22 for Cluster V HEIs and new spinouts created by QMUL in 2022/23. Our performance would rank joint 8<sup>th</sup> against the benchmarking data available for 2021/22.

| Rank | HEI  | No. of new spin outs |
|------|--|----------------------|
| 1    | Imperial College of Science, Technology and Medicine | 10                   |
| 2    | The University of Manchester                         | 10                   |
| 3    | The University of Oxford                             | 9                    |
| 4    | The University of Cambridge                          | 7                    |
| 5    | The University of Birmingham                         | 5                    |
| 6    | The University of Liverpool                          | 5                    |
| 7    | University College London                            | 5                    |
| 8    | Queen Mary University of London                      | 4                    |
| 9    | Newcastle University                                 | 4                    |
| 10   | The University of Leeds                              | 4                    |
| 11   | University of Nottingham                             | 3                    |
| 12   | The University of Sheffield                          | 2                    |
| 13   | King's College London                                | 1                    |
| 14   | The University of Bristol                            | 1                    |
| 15   | The University of Southampton                        | 1                    |
| 16   | London Business School                               | 0                    |
| 17   | The University of Warwick                            | 0                    |

The total number of new spinouts created by the other HEIs reduced from a total of 99 new spinouts in 2020/21 to only 67 in 2021/22. Whilst there are a number of reasons for this, access to early-stage investment capital is a key reason. QMUL created the internal QMUL Investment Fund to overcome this and it has proven useful in attracting external investment for our spinouts.

## 2.2. QMUL Spinout Portfolio Management

### *Approach*

QMI supports QMUL spinout companies by representing its shareholder interests on the boards of spinouts. After a spinout company has been formed, it is standard practice to appoint a QMI executive as a non-executive director who will remain involved during the early development of the spinout and update the QMI Board as necessary. QMI's involvement in the spinout usually diminishes after they receive Series A investment and/or QMUL's shareholding is diluted below 10%.

### *Performance*

| <b>Spinout portfolio</b> | <b>2018/19</b> | <b>2019/20</b> | <b>2020/21</b> | <b>2021/22</b> | <b>2022/23</b> |
|--------------------------|----------------|----------------|----------------|----------------|----------------|
| Actual                   | 16             | 18             | 22             | 26             | 24             |

  

| <b>Spinout proceeds</b> | <b>2018/19</b> | <b>2019/20</b> | <b>2020/21</b> | <b>2021/22</b> | <b>2022/23</b> |
|-------------------------|----------------|----------------|----------------|----------------|----------------|
| Actual (£'000)          | 263            | -              | 1,007          | 764            | 341            |

The spinout portfolio at the end of 2022/23 consisted of 24 active companies with QMUL's aggregated shareholdings valued at £3.4 million. As part of the annual monitoring of spinouts, it was decided during the year that a number of old spinouts that hadn't reached the required commercial target would be voluntary dissolved and this led to a reduction in the spinout portfolio.

Whilst the number of spinouts in the portfolio is not in itself an indication of quality or guaranteed downstream capital returns, a larger and more mature portfolio would provide QMUL with a greater chance of spinout successes over the long term. QMUL's portfolio is smaller and less mature than comparators and QMI is actively looking to increase the number of spinouts it creates but, in order to generate impact and returns to QMUL, it is focused on spinouts that have the most potential for high-growth and scalability.

Examples of spinout activity in the year include:

#### *Kinomica Limited*

The company raised a further £1.4m of funding following a raise of £3.9m Series A investment in 2020 ahead of a potential Series B investment round. The investment will be used to advance its pioneering technology that could prove integral in the development of new kinase inhibitor drugs for treating cancer patients and other conditions.

#### *hVIVO plc*

The company is the oldest spinout in the portfolio and reported income in excess of £50m per annum. The company carried out clinical trial activities from the QMB Innovation Centre in Whitechapel.

The opportunities to realise value in non-listed QMUL spinout are limited, with a trade sale of the company's entire shareholding for cash the most likely route of exit. QMI has more control over the shares held in AIM-listed spinouts and will look to continue the sell-down of these shares to provide an annual return to QMUL and support more entrepreneurial activity, anticipating a growth in academic numbers in the coming years.

### *Benchmarking*

The following table illustrate the returns to HEIs from the sale of shares in spinout companies in 2021/22.

| Rank | HEI  | Sale of shares in spin-offs (£' 000) |
|------|--|--------------------------------------|
| 1    | The University of Cambridge                          | 32,621                               |
| 2    | The University of Oxford                             | 13,130                               |
| 3    | King's College London                                | 11,128                               |
| 4    | University College London                            | 6,845                                |
| 5    | The University of Liverpool                          | 3,197                                |
| 6    | Imperial College of Science, Technology and Medicine | 921                                  |
| 7    | The University of Leeds                              | 501                                  |
| 8    | University of Nottingham                             | 450                                  |
| 9    | Queen Mary University of London                      | 341                                  |
| 10   | The University of Bristol                            | 230                                  |
| 11   | The University of Birmingham                         | 95                                   |
| 12   | Newcastle University                                 | 57                                   |
| 13   | London Business School                               | 0                                    |
| 14   | The University of Manchester                         | 0                                    |
| 15   | The University of Sheffield                          | 0                                    |
| 16   | The University of Southampton                        | 0                                    |
| 17   | The University of Warwick                            | 0                                    |

Most of the HEIs in this cluster realised value from their spinout portfolio during 2020/21. QMI will focus its efforts to realise value in its listed investment annually and register a ranking position in this metric.

## 2.3. Technology Licensing

### *Approach*

By volume of work, the most common route to commercialise IP is through licensing of IP rights to companies. This strategy is less resource-intensive than creating spinouts and has a higher probability of technologies getting to market by leveraging the existing business expertise and development and distribution channels of the partnering licensee. QMI utilises various industry channels and existing contacts to find partners seeking business solutions and opportunities offered by QMUL technologies.

### *Performance*

Licensing performance is measured against (1) the number of new commercial agreements executed in the year and (2) the total licence income received in the year:

| Agreement numbers | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 |
|-------------------|---------|---------|---------|---------|---------|
| Target            | 35      | 35      | 35      | 29      | 28      |
| Actual            | 25      | 27      | 28      | 29      | 24      |
| Licence income    | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 |
| Target (£'000)    | 550     | 670     | 930     | 977     | 1,130   |
| Actual (£'000)    | 771     | 975     | 1,262   | 2,084   | 1,911   |

24 new technology agreements were signed in the year, compared with 29 in the previous year. Licence income of £1.9m was similar to the previous year and driven by royalty payments, which contributed £1.3m towards this total.

QMI endeavours to obtain a meaningful signature payment from licensees, however given the early nature of QMUL IP this is not always possible. Increased licence income in the near term will therefore



come from mature licences, which have delivered milestone payments and are producing regular recurring royalties, rather than by signing new licences in year.

At present around 85% of the QMUL licence portfolio are at the pre-milestone stage and ~10% generate royalties. Despite this ratio, royalties are expected to contribute the majority of licence income in the coming year.

Myriad Genetics Inc (early-stage pancreatic cancer diagnostic) continued to deliver large royalties and Dragonfly Technology Solution Limited (consumer predictive AI software) has made good progress to increase sales and thereby increase the royalties paid to QMUL. The royalties received from these licences will underpin IP income in the near term.

### *Benchmarking*

Data isn't available on the annual licences signed so the following table shows the total number of agreements for each HEI instead.

| Rank | HEI  | Total No. of Agreements |
|------|--|-------------------------|
| 1    | The University of Cambridge                          | 17,931                  |
| 2    | The University of Oxford                             | 4,657                   |
| 3    | University College London                            | 2,110                   |
| 4    | The University of Southampton                        | 1,377                   |
| 5    | The University of Leeds                              | 977                     |
| 6    | The University of Bristol                            | 682                     |
| 7    | The University of Manchester                         | 421                     |
| 8    | The University of Sheffield                          | 419                     |
| 9    | The University of Birmingham                         | 320                     |
| 10   | Imperial College of Science, Technology and Medicine | 264                     |
| 11   | University of Nottingham                             | 236                     |
| 12   | Newcastle University                                 | 178                     |
| 13   | Queen Mary University of London                      | 163                     |
| 14   | The University of Warwick                            | 158                     |
| 15   | The University of Liverpool                          | 76                      |
| 16   | King's College London                                | 65                      |
| 17   | London Business School                               | 0                       |

| Rank | HEI  | IP licence income |
|------|--|-------------------|
| 1    | The University of Oxford                             | 74,627            |
| 2    | The University of Sheffield                          | 41,467            |
| 3    | The University of Cambridge                          | 11,816            |
| 4    | Imperial College of Science, Technology and Medicine | 11,515            |
| 5    | University College London                            | 5,253             |
| 6    | The University of Manchester                         | 4,893             |
| 7    | The University of Liverpool                          | 4,194             |
| 8    | Queen Mary University of London                      | 1,911             |
| 9    | King's College London                                | 1,549             |
| 10   | The University of Southampton                        | 1,503             |
| 11   | Newcastle University                                 | 1,310             |
| 12   | The University of Birmingham                         | 1,249             |
| 13   | University of Nottingham                             | 1,022             |
| 14   | The University of Leeds                              | 549               |
| 15   | The University of Bristol                            | 485               |
| 16   | The University of Warwick                            | 448               |
| 17   | London Business School                               | 62                |

The HE-BCI reported metric for licence numbers is the total number of active IP commercialisation agreements in the portfolio. QMUL's ranking is similar to the previous year but the value of this benchmarking is limited due to the validity of the high values reported for this metric by some HEI and what they may reflect e.g. high volume non-exclusive licensing of teaching materials or apps; consequently, these tables may not reflect the true scale of commercialisation of research innovations within these HEIs.

QMUL's ranking in licence income is the same as the previous year but the gap between it and the next highest ranking positions has significantly increased. A raise in this ranking can only be driven by a growth in royalties rather than signature/milestone payment. There are a couple of licences that are showing growth but at present there are no indicators of exponential growth that would see QMUL's ranking change. QMI will continue to find the most suitable partners for QMUL IP to improve the likelihood of the technology delivering future recurring royalty payments.

## 2.4. Building the IP Pipeline

### *Approach*

Effective identification and management of new innovations across the breadth of QMUL's research base is important to ensure there is depth as well as quality in QMUL's IP pipeline that will drive a long-term increase in new licences and spinout companies. In order to ensure a strong pipeline of commercial opportunities, QMI seeks out commercially promising ideas from across QMUL's research base. New inventions arising from research are identified and registered within QMI as an *invention disclosure*. QMI evaluates each invention disclosure, and those with the best chance of commercial success are progressed.

### *Performance*

| New Disclosures | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 |
|-----------------|---------|---------|---------|---------|---------|
| Target          | 120     | 110     | 104     | 104     | 104     |
| Actual          | 94      | 116     | 116     | 71      | 93      |

A good pipeline remains essential for future commercial successes. There was a fall in disclosure numbers in 2021/22 due to high number of staff vacancies in the BioPharma team. In the course of

2022/23 these positions were filled and this contributed towards an increase in disclosure numbers. A return to 100+ disclosures is now expected.

The internal Impact fund continues to be an important source to engage with new academics. It supports them with funding to advance the commercialisation process and demonstrate the wider impact of their work. The team continues to identify different ways to engage individuals that have not connected with QMI previously.

### *Benchmarking*

| Rank | HEI  | Number of disclosures |
|------|--|-----------------------|
| 1    | The University of Oxford                             | 323                   |
| 2    | The University of Cambridge                          | 238                   |
| 3    | The University of Birmingham                         | 206                   |
| 4    | Imperial College of Science, Technology and Medicine | 191                   |
| 5    | University College London                            | 162                   |
| 6    | The University of Leeds                              | 114                   |
| 7    | The University of Manchester                         | 112                   |
| 8    | University of Nottingham                             | 95                    |
| 9    | Queen Mary University of London                      | 93                    |
| 10   | The University of Sheffield                          | 76                    |
| 11   | The University of Bristol                            | 74                    |
| 12   | The University of Liverpool                          | 65                    |
| 13   | The University of Southampton                        | 60                    |
| 14   | King's College London                                | 59                    |
| 15   | Newcastle University                                 | 41                    |
| 16   | The University of Warwick                            | 35                    |
| 17   | London Business School                               | 0                     |

QMUL improved its ranking in this benchmark following a return to a full team. It's expected that QMI will return to 100+ disclosures but the opportunity to make improvements above this would be limited as QMI's focus will continue to be on the quality of new disclosures, their evaluation and long-term engagements with research teams, rather than target chasing for its own sake.