



**QMI annual report**

<b>Outcome requested:</b>	Finance and Investment Committee is asked to <b>note</b> the QMI annual report for 2020/21.
<b>Executive Summary:</b>	<ul style="list-style-type: none"> <li>• Research commercialisation KPIs would rank QMUL's 2020/21 performance between 6th and 11th position out of 17 when compared to the 2019/20 performance of other universities within KEF's Cluster V, looking across a number of benchmarking criteria.</li> <li>• 3 new spinouts established: Amber Therapeutics Limited, DAACI Limited and Nemisindo Limited</li> <li>• A portfolio of 22 active spinout companies with QMUL's aggregated shareholdings valued at over £5 million at the year end</li> <li>• 2 early stage QMUL spinout companies secured a combined £4.2 million of investment and 2 late stage spinouts raised £25m</li> <li>• £1 million raised from the disposal of shares in late stage companies (2019/20 £nil)</li> <li>• 28 new commercial agreements in the year (2019/20: 27)</li> <li>• £1,262k of licence income received (2019/20: £976k)</li> <li>• 116 new invention disclosures recorded and evaluated (2019/20: 116)</li> </ul>
<b>QMUL Strategy:</b>	Research and Innovation
<b>Internal/External reference points:</b>	Strategy 2030 UKRI
<b>Strategic Risks:</b>	Research Income Research Quality
<b>Equality Impact Assessment:</b>	N/A
<b>Subject to prior and onward consideration by:</b>	By Committee only.
<b>Confidential paper under FOIA/DPA:</b>	No
<b>Timing:</b>	Annual report to the Committee
<b>Author:</b>	Reitesh Desai, Finance Director, QMI
<b>Date:</b>	03 March 2022

**Senior  
Management/External  
Sponsor:**

Sharon Ellis, Director of Research, Enterprise and Partnerships



# Queen Mary Innovation Limited Annual Research Commercialisation Report 2020/21

## 1. Executive Highlights

- Research commercialisation KPIs would rank QMUL's 2020/21 performance between 6th and 11th position out of 17 when compared to the 2019/20 performance of other universities within KEF's Cluster V, looking across a number of benchmarking criteria.
- 3 new spinouts established: Amber Therapeutics Limited, DAACI Limited and Nemisindo Limited
- A portfolio of 22 active spinout companies with QMUL's aggregated shareholdings valued at over £5 million at the year end
- 2 early stage QMUL spinout companies secured a combined £4.2 million of investment and 2 late stage spinouts raised £25m
- £1 million raised from the disposal of shares in late stage companies (2019/20 £nil)
- 28 new commercial agreements in the year (2019/20: 27)
- £1,262k of licence income received (2019/20: £976k)
- 116 new invention disclosures recorded and evaluated (2019/20: 116)

## 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 licenses and spin-outs 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 universities 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 (2019/20) against which QMUL's relative performance can be benchmarked. To guide the benchmarking, QMUL's research income for 2020/21 would rank 13<sup>th</sup> within Cluster V.

## 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 QMUL's commercial investment partner IP Group Plc, as well as other venture capital investors interested in backing QMUL technologies.

### Performance

Spinouts created	2016/17	2017/18	2018/19	2019/20	2020/21
Target	3	1	1	1	2
Actual	3	1	2	2	3

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

*Amber Therapeutics Limited*, formed by Professor Charles Knowles [Blizard Institute], will build an electronics platform for addressing issues such as urinary incontinence using sensors and software.

*DAACI Limited*, set up by PhD student Dr Joe Lyske [School of Electronic Engineering and Computer Science], will use QMUL IP to create AI software to allow media composers to write music creatively.

*Nemisindo Limited*, founded by Professor Josh Reiss [School of Electronic Engineering and Computer Science], is a software company that will allow users to create sound effects for media platforms.

### Benchmarking

The following table set out the number of new spinouts created in 2019/20 for Cluster V HEIs and new spinouts created by QMUL in 2020/21. Our performance would rank joint 11<sup>th</sup> against the benchmarking data available for 2019/20.

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

A lack of access to early-stage investment capital remains a hurdle for the creation of QMUL spinouts. An internal QMUL Investment Fund is being created from spinout proceeds to lower this barrier by providing early-stage seed financing to future QMUL spinout companies. Any investment would be determined on: commercial validation through leveraged external funding; a fully costed plan with relevant milestones; and the likelihood of it being able to raise follow on investment/funding based on market analysis.

## 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>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Actual	13	14	16	18	22

  

<b>Spinout proceeds</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Actual (£'000)	-	-	263	-	1,007

The spinout portfolio at the end of 2020/21 consisted of 22 companies with QMUL's aggregated shareholdings valued at over £5 million.

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

Significant activities in the portfolio during 2020/21 include:

#### *Open Orphan plc (formally hVIVO) / Poolbeg Pharma plc*

Open Orphan plc expertise in running trials for respiratory diseases led to it developing the world's first human challenge study trial for COVID-19 during the year. In July 2021 Poolbeg Pharma plc spun out from Open Orphan plc and raised £25m on AIM. QMUL shareholding in Open Orphan plc and Poolbeg Pharma plc were valued at £832k and £129k at year end.

#### *Actual Experience plc*

QMUL's other AIM-listed company, Actual Experience plc, continued its slow growth. Revenues remain low and are derived from a handful of customers. The company raised £10m of investment in early 2021 to strengthen its balance sheet and fund growth. At year end QMUL's shareholding in Actual Experience was valued at £2.1 million.

#### *Kinomica Limited*

The company raised £3.9m of funding to invest in its pioneering technology that could prove integral in the development of new kinase inhibitor drugs for treating cancer patients and other conditions. It has also taken office space in the Queen Mary Enterprise Zone, alongside one of our other spinouts (Nemisindo Limited).

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 during the year was able to realise £0.5m following the disposal of shares held in Actual Experience plc and another £0.5m from the shares held in Open Orphan plc. QMI will look to continue the sell-down of the shares held in listed spinouts to provide an annual return to QMUL and support more entrepreneurial activity, anticipating a growth in academic numbers over the coming 2 years.

### *Benchmarking*

The following table illustrate the returns to HEIs from the sale of shares in spinout companies in 2019/20.

<b>Rank</b>	<b>University</b>	<b>Sale of shares in spin-offs (£' 000)</b>
1	Imperial College of Science, Technology and Medicine	25,443
2	University College London	13,590
3	The University of Oxford	4,644
4	University of Nottingham	1,614
5	The University of Leeds	1,393
6	Queen Mary University of London	1,007
7	The University of Cambridge	986
8	The University of Birmingham	496
9	Newcastle University	343
10	The University of Bristol	322
11	The University of Warwick	0
12	The University of Southampton	0
13	London Business School	0
14	King's College London	0
15	The University of Sheffield	0
16	The University of Liverpool	0
17	The University of Manchester	0

Over half of the Universities in this cluster realised value from their spinout portfolio during 2019/20. 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 license income received in the year:

<b>Agreement numbers</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Target	35	35	35	35	35
Actual	26	27	25	27	28

  

<b>License income</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Target (£,000)	550	550	550	670	930
Actual (£,000)	490	594	771	975	1,262

28 new technology licenses were signed in the year, comparable with 27 in the previous year. License income was £1.3m up from £771k in 2019/20. During the year QMI assigned maturing patents to an existing licence holder generating a one-off payment of £300k and this deal contributed to licence income exceeding £1m for the first time.

QMI endeavours to obtain a meaningful signature payment from licensees, however given the early nature of QMUL IP this is not always possible. Increased license income in the near term will therefore come from mature licenses, that have delivered milestone payments and are producing regular recurring royalties, rather than by signing new licenses in year.

At present around 85% of the QMUL license 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 strong royalties and Dragonfly Technology Solution Ltd (Consumer predictive AI software) has made good progress in returning increasing royalties as anticipated in the previous year.

We have reviewed our IP policy against benchmark Institutions, having for many years had a policy that is very favourable to academics in the hope this would have stimulated greater commercialisation activity. As we put more internal effort into supporting entrepreneurial activity in other ways - a community of practice for entrepreneurial academics, though the Entrepreneurs Forum chaired by Andrew Livingston, and bringing in more Entrepreneurs in Residence to provide hands on experience and knowledge transfer to academics - we feel a more proportionate share of “benefits” is timely. The policy will need to be considered by the Research & Innovation board in the coming weeks

## Benchmarking

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

Rank	University	Total No. of Agreements
1	The University of Cambridge	10,922
2	The University of Oxford	3,601
3	The University of Manchester	2,360
4	The University of Southampton	1,999
5	Imperial College of Science, Technology and Medicine	585
6	University College London	498
7	The University of Sheffield	451
8	The University of Leeds	318
9	University of Nottingham	253
10	The University of Birmingham	197
11	Queen Mary University of London	180
12	King's College London	151
13	Newcastle University	143
14	The University of Warwick	117
15	The University of Bristol	93
16	The University of Liverpool	55
17	London Business School	0

Rank	University	IP licence income
1	The University of Oxford	74,118
2	The University of Sheffield	26,526
3	University College London	18,057
4	The University of Cambridge	9,603
5	King's College London	3,035
6	Imperial College of Science, Technology and Medicine	3,017
7	The University of Liverpool	2,688
8	The University of Manchester	1,548
9	The University of Southampton	1,416
10	Queen Mary University of London	1,262
11	University of Nottingham	1,234
12	Newcastle University	1,055
13	The University of Leeds	645
14	The University of Bristol	527
15	The University of Birmingham	492
16	The University of Warwick	165
17	London Business School	42



The HE-BCI reported metric for license numbers is the total number of active IP commercialisation agreements in the portfolio. QMUL's ranking has gone up a couple of positions 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. For example, 3 of the top 4 ranking Universities for license numbers would rank bottom for IP License income per license.

QMUL's 2020/21 license income of £1,262k would see an increase in ranking position. The 2020/21 license income is enhanced by the one-off assignment payments but this level of income is expected to be maintained in 2021/22 due to another one-off assignment payment, large upfront payment on a new licence and continuing royalties from Dragonfly and Myriad. At present there are no indicators of exponential growth in royalties that would see QMUL shoot up the ranking. 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 licenses 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*

<b>New Disclosures</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>
Target	110	120	120	110	104
Actual	118	105	94	116	116

A good pipeline remains essential for future commercial successes and it's encouraging that the number of disclosures recorded in 2019/20 were maintained in 2020/21.

The internal Impact fund, which replaced the Proof-of-Concept fund, continues to be an important source to engage with new academics, and support them not only to commercialise but demonstrate wider impact of their work (valuable to future Research Excellence Framework exercises). We funded 10 projects, which has enabled them to progress further up the Technology Readiness levels, an example includes now having a prototype of a novel electronic skin platform at bench-scale, and a patent application with lawyers. Our projects have supported academics to progress discussions on full commercial application in the agri-tech sector.

## Benchmarking

Rank	University	Number disclosures	of
1	The University of Oxford	350	
2	The University of Cambridge	311	
3	The University of Birmingham	254	
4	Imperial College of Science, Technology and Medicine	250	
5	University College London	149	
6	Queen Mary University of London	116	
7	King's College London	91	
8	The University of Manchester	91	
9	The University of Bristol	88	
10	The University of Warwick	87	
11	The University of Liverpool	87	
12	The University of Southampton	70	
13	University of Nottingham	58	
14	The University of Leeds	53	
15	The University of Sheffield	43	
16	Newcastle University	29	
17	London Business School	0	

QMUL's performance for this metric is good. The opportunity to make improvements in the ranking position would be limited as QMI's emphasis on disclosure numbers will not be target chasing for its own sake, but on continuing to increase the quality of new disclosures, their evaluation and long-term engagements with research teams.