



Queen Mary

**University of London**

# PGR Open Day 2022

*Faculty of Science & Engineering*

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# Introductions to the Faculty

- The Faculty of Science and Engineering consists of
  - 5 Schools
  - 4 interdisciplinary institutes and networks
  - Over 320 academic research staff
  - >900 PhD students
- 97% of research outputs at least 'internationally excellent', with half at the top 4-star 'world-leading' rating.
- Attracted over £150m in funding in last 5 years
- Recognised for our distinctive, curiosity-driven and applied research
- Research supported by world-class research infrastructure
- Entrepreneurship and innovation embedded in our research culture



Horizon 2020  
Programme

LEVERHULME  
TRUST

 THE ROYAL  
SOCIETY

 Engineering and  
Physical Sciences  
Research Council

 Science and  
Technology  
Facilities Council

 Innovate  
UK

 Biotechnology and  
Biological Sciences  
Research Council

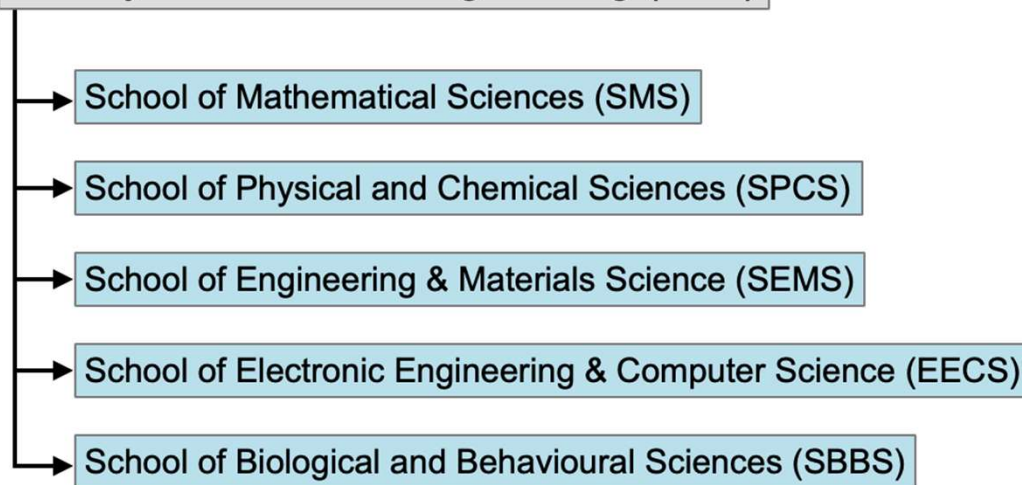
 UK Research  
and Innovation

 Natural  
Environment  
Research Council

 Medical  
Research  
Council

# Our Faculty

## Faculty of Science & Engineering (S&E)



## Cross-faculty networks/institutes

Bioengineering Network

Material Research Network

Digital Environment Research Institute

Centre for Urban Transport Technology

## Science and Engineering



Queen Mary University of London conducts world-class science and engineering research delivering fundamental knowledge and translational impact to benefit society.



**Professor Martin Knight**

Dean for Research, Faculty of Science and Engineering

# Research Excellence in the Faculty

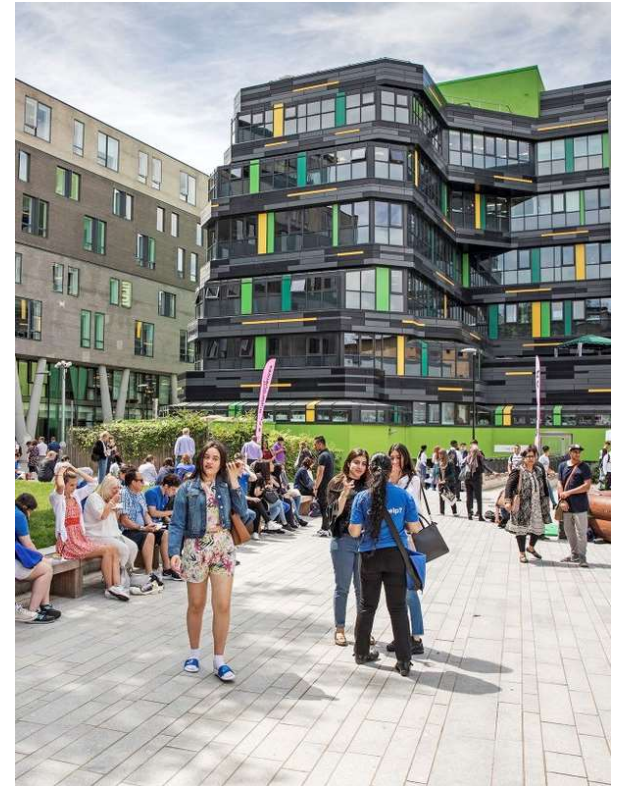
- 7<sup>th</sup> in the UK for research quality in last national assessment
- NERC Doctoral Training Partnership
  - (UCL, KCL, Kew Gardens, and the Natural History Museum)
- 2 X BBSRC Doctoral Training Partnership
  - LIDO with UCL, KCL and industry
  - Collaborative Training Partnership led by Industry
- 4 x EPSRC Centre for Doctoral Training
  - Data-Centric Engineering
  - Media Arts Technology
  - AI in Music
  - Intelligent Games
- STFC Centre for Doctoral Training in fundamental physics and data intensive science
- Athena Swan accreditation for all Schools.
- Successful spin-out companies; *Apatech*, *Chatterbox*, *Actual Experience* ..





# Faculty Vision

- Be recognised as one of the leading science and engineering faculties in the UK, ambition to be ranked in the top 10 universities in the UK
- Have an international reputation for cutting edge research and education, which attracts the best staff and students, and gives them the freedom to excel
- Offer students an education responsive to their personal aspirations and prepares them for leading roles in society
- Have a culture of flexibility and innovation, which embraces diversity, which empowers academic leadership and where excellence is rewarded.



# PGR Student Role in The Vision

- You will be part of the vision
- Creating knowledge is our core business - this is what we do!
- We will work with you - investment of almost £100,000 each
- Research quality of Queen Mary is largely the research conducted by PGR
- Your success is our goal!



# Our Faculty

## Research & Impact

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# Impact - Contribution to economy & society

## Policy on biodegradable plastics

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Informed European Commission  
regulations

## US\$26m per year

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Estimated savings from the use of  
Attrax™ bone biomaterial based  
on QM research

## Solving software bugs for Facebook, Amazon, Spotify, Uber, Mozilla, Sky, M&S

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Using automated program analyser that  
can find complex problems using  
separation logic and bi-abductive  
inference

## 1<sup>st</sup> in the world ‘on-the-fly’ modelling of radiation damage

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‘On-the-fly’ molecular dynamics simulation software to  
model radiation damage on materials

## Reduced new malaria cases by 27m

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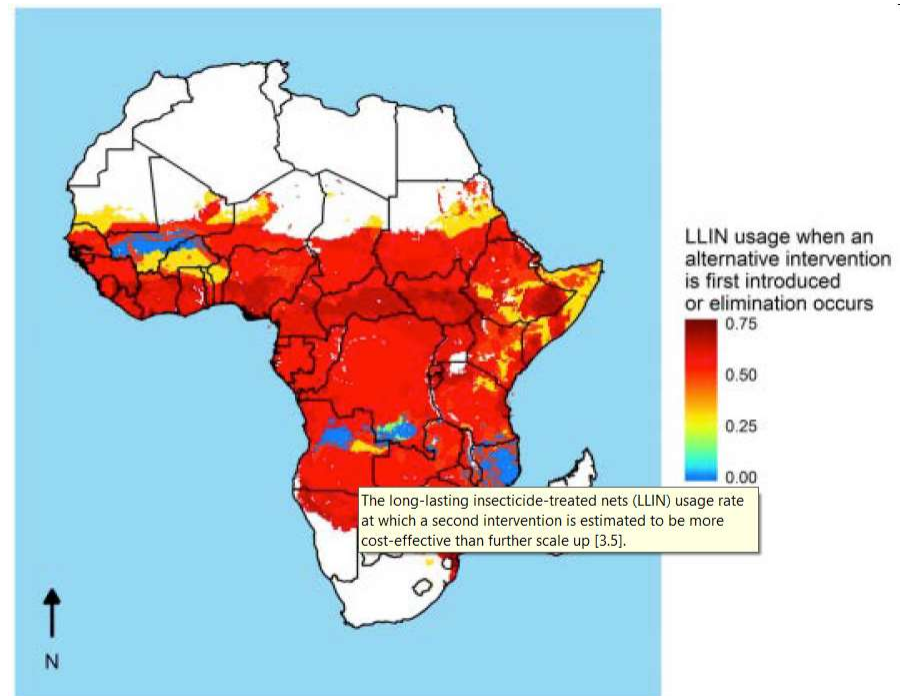
Through advanced modelling to  
advise international investment in  
antimalarial interventions

# Maths that save lives

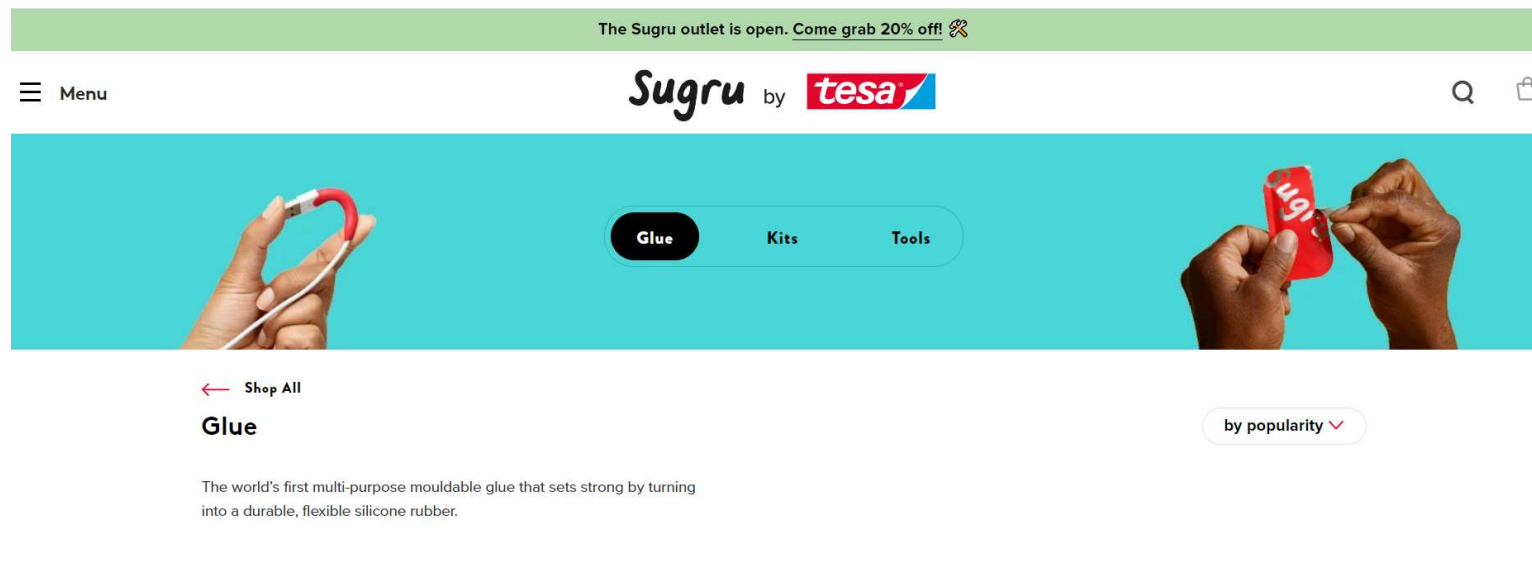
Malaria is one of the leading global causes of death and morbidity, infecting 230,000,000 and killing over 440,000 people per year.

Using mathematical modelling, J. Griffin evaluated the costs and benefits of four leading malaria intervention strategies.

Global Fund strategically allocated USD4 Bn of funding in 2017–2019.



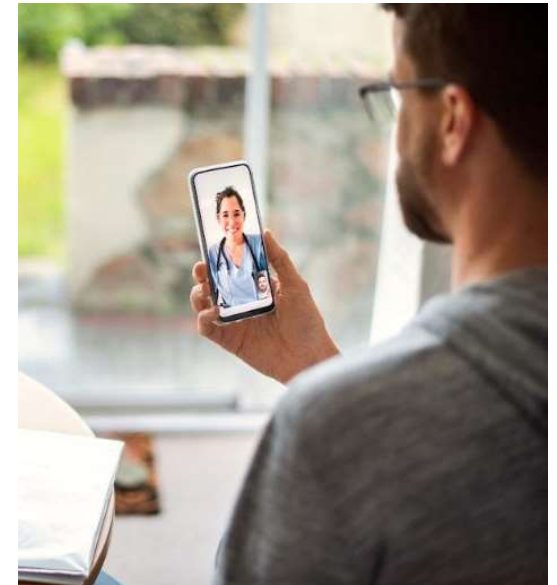
# Material Science



**One would think it is only a better version of blu tack**

# DIALOG+ App

- DIALOG+ App - structures patient-clinician conversations to elicit patients' views on treatment & quality of life
- Improves quality of life, reduces symptoms, and achieves a better outcome for independent living and relationships.
- Recommended for use in the mandatory evaluation of all adult patients in various NHS Trusts
- Benefitting several thousand patients in the UK every day
- Translated to 15+ languages and used in 10+ countries



# Impact - Contribution to economy & society

## Reducing illegal poaching of sea turtles to **1.3% in 2020**

From 38.3% of the nesting population in 2008, contributing to dramatic increases in turtle numbers on Cabo Verde from ~4,100 to >60,000



## Discovery of exoplanet Proxima b

Within the habitable zone in its own solar system, where liquid water can exist – and possibly could harbor life; plans are afoot to send unmanned spacecraft to explore

## One of the world's most innovative companies in music – LANDR

Providing online intelligent music production service and the 1<sup>st</sup> company in the world to bring AI and machine learning to audio production

# Breakout Sessions

## 5 Breakout Sessions

- ***Please join the session relevant to your research interest and PGR degree programme of interest***
  - **EECS:** School of Electronic Engineering and Computer Science
  - **SEMS:** School of Engineering and Material Sciences
  - **SMS:** School of Mathematical Sciences
  - **SPCS:** School of Physical and Chemical Sciences
  - **SBBS:** School of Biological and Behavioural Science



# Thank You



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