



National Biofilms
Innovation Centre

BIOFILM PREVENTION – NBIC'S APPROACH

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biofilms.ac.uk

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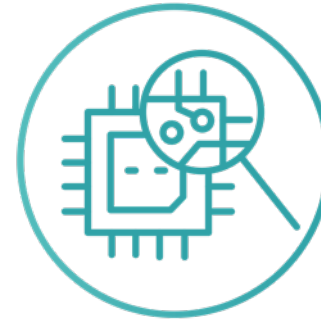
4 Strategic Interventional Themes

THE KEY PILLARS OF OUR RESEARCH STRATEGY



Prevent

Knowledge-based design of surfaces and materials



Detect

Accurate, quantitative, actionable detection or sensing of biofilms



Manage

Kill, remove or control established biofilms from exploiting their life cycle dynamics



UNITED KINGDOM • CHINA • MALAYSIA



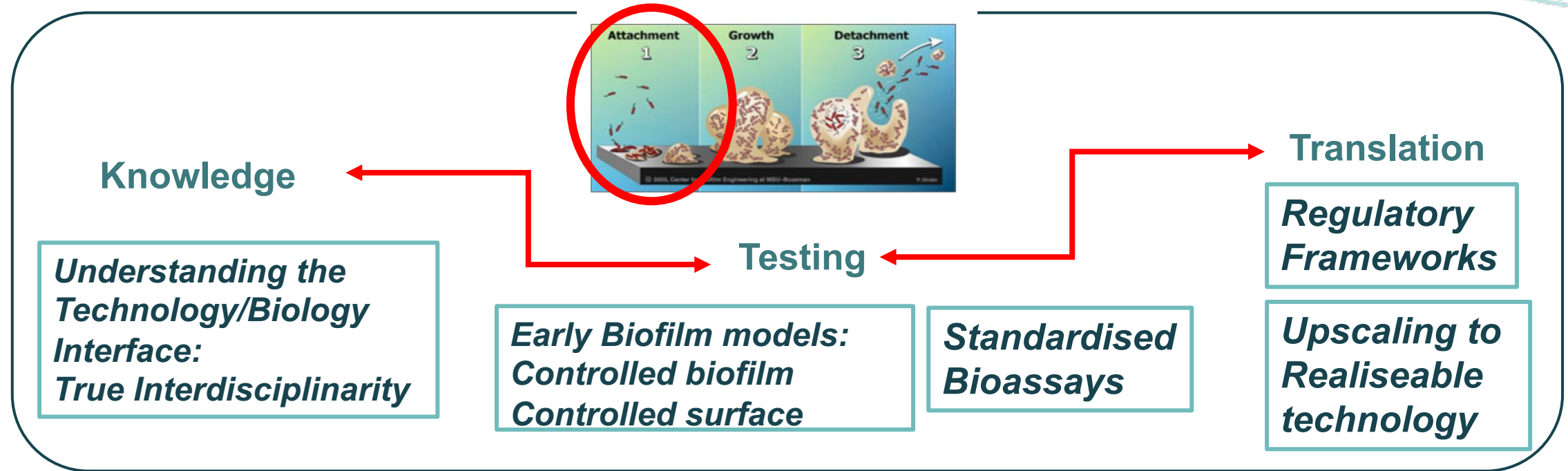
Engineer

Control and direct complex microbial community processes in process applications



Prevent - Remit and Strategy

Prevention of early stage microbial adhesion and colonisation events at surfaces.
Curtail the development of early stage biofilms so that performance is retained.



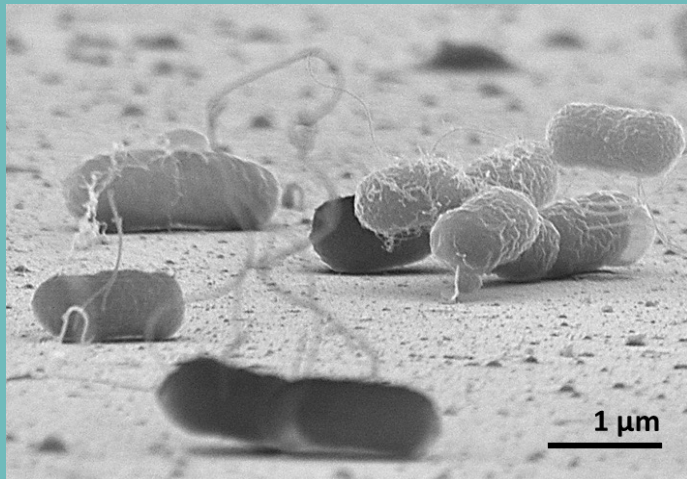
49% of POC Projects related to this theme



Knowledge

Understanding the
Technology/Biology
Interface:

Harnessing True
Interdisciplinarity



Surface Science

**Advanced
Materials**

**Imaging and
Sensing**

**Across
disciplines**

**Engineering
across
lengthscales**

**Interventions
and Responses**

**Interfacial
interactions**

**Mechanisms/
Mode of Action**

**Predictive
Modelling**

Data mining

**Function &
Activity**

**'Omics and
Bioinformatics**

**Complex
Community
Interactions**

AMR

Testing

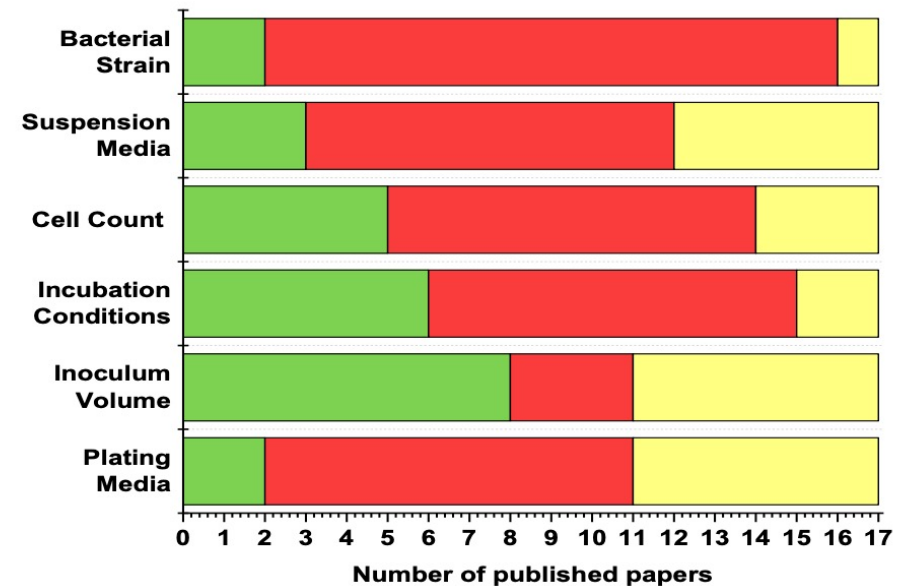
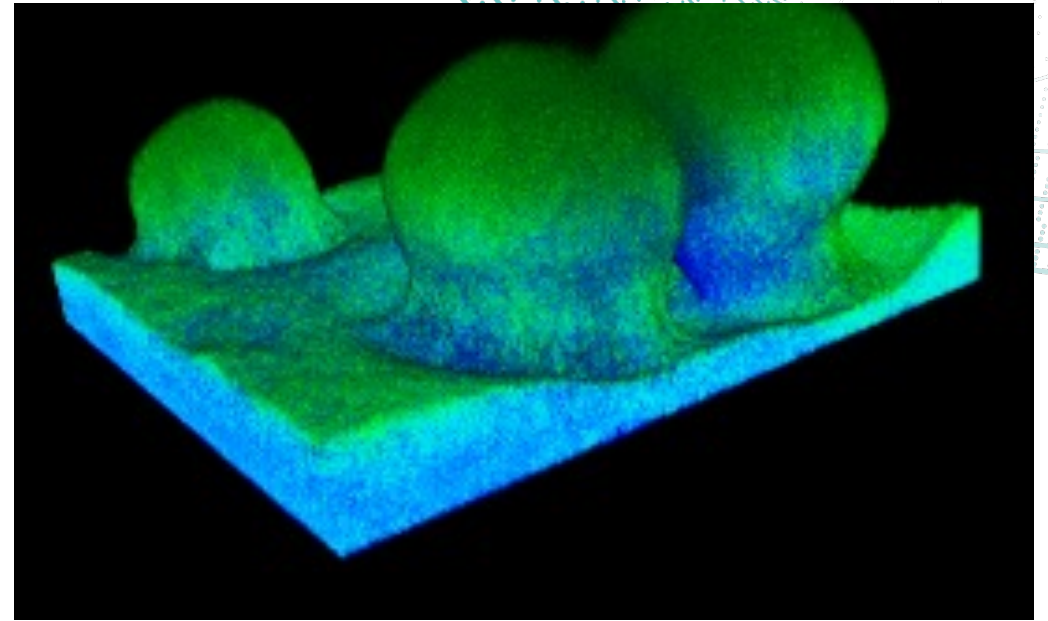
Early Stage Biofilm Models and Standards



Review of Literature using a standard ISO bioassay



60 peer-reviewed papers;
17 in detail



Example Prevent Proof of Concept projects 1/2

Facile fabrication of a disruptive titanium technology using a polydopamine capturing platform

Measuring biofilm formation in venous catheters

Managing Aquatic Biofilms via Surface Manipulation

QuorumClean – a project to develop a novel marine antifouling technology using novel Beta lactams that can outperform conventional approaches, but with a reduced environmental impact

New generation colour-encoded coatings for surgical tools with intrinsic antimicrobial action

Advanced testing platforms to address key performance variables for antimicrobial products on domestic surfaces



THE UNIVERSITY
of EDINBURGH



The
University
Of
Sheffield.

PML | Plymouth Marine
Laboratory



KIMAL
delivering healthcare innovation

AkzoNobel



Unilever



Unilever

Example Prevent Proof of Concept projects 2/2

Development of the first ESPRIT-AM antimicrobial self-sealing vascular access graft

Utilising biofilm-driven mineral precipitation for sustainable construction materials and a healthy built environment

Assessing the potential of a recombinant anti-biofilm protein as a cost-effective, environmentally-friendly treatment against souring and bio-corrosion

Developing novel antimicrobial surfaces preventing biofilms in the rail and transport industry

Bioinspired protein technology for biofilm prevention on indwelling medical devices

Development of novel biomimetic surfaces to prevent biofilm formation on catheters



HARMAN
technology

ESP Technology Ltd.

Aadaptavate

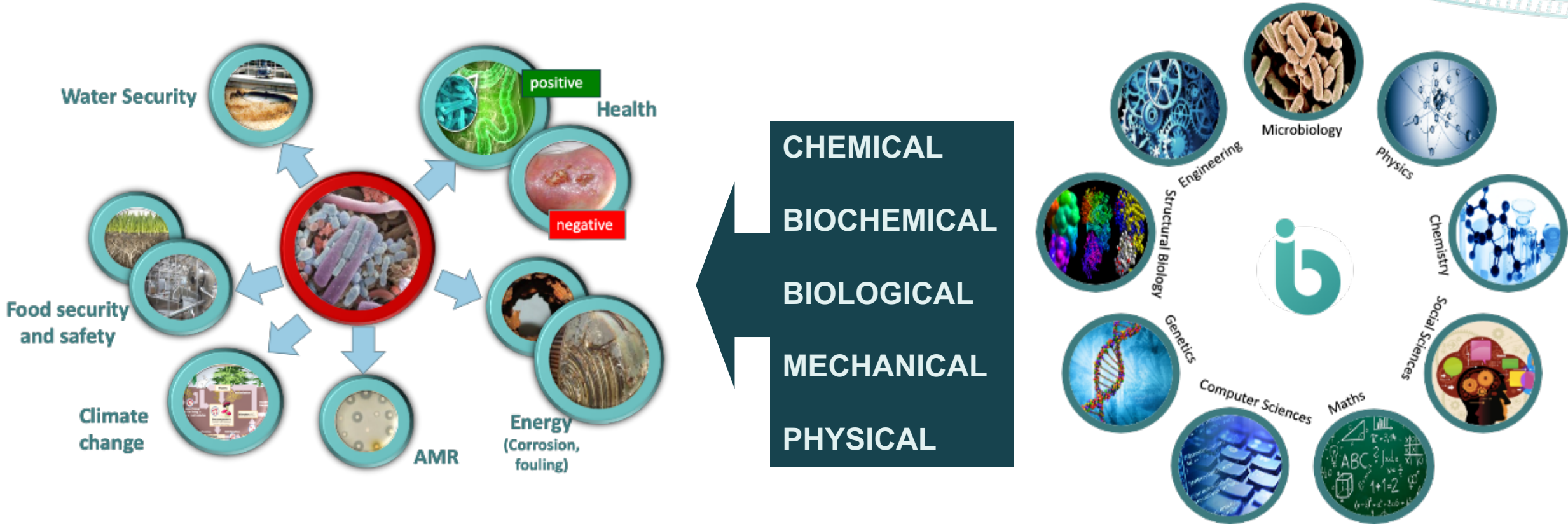
 **virustatic**

NitroPep

 **virustatic**

Teleflex
MEDICAL OEM

Areas of opportunity for biofilm prevention



Thank you!

WE ARE
NBIC

Harnessing the UK's Academic &
Industrial Strength in Biofilms

DISCOVER MORE

GET IN TOUCH

