



Dstl Microbial capabilities

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Ministry
of Defence

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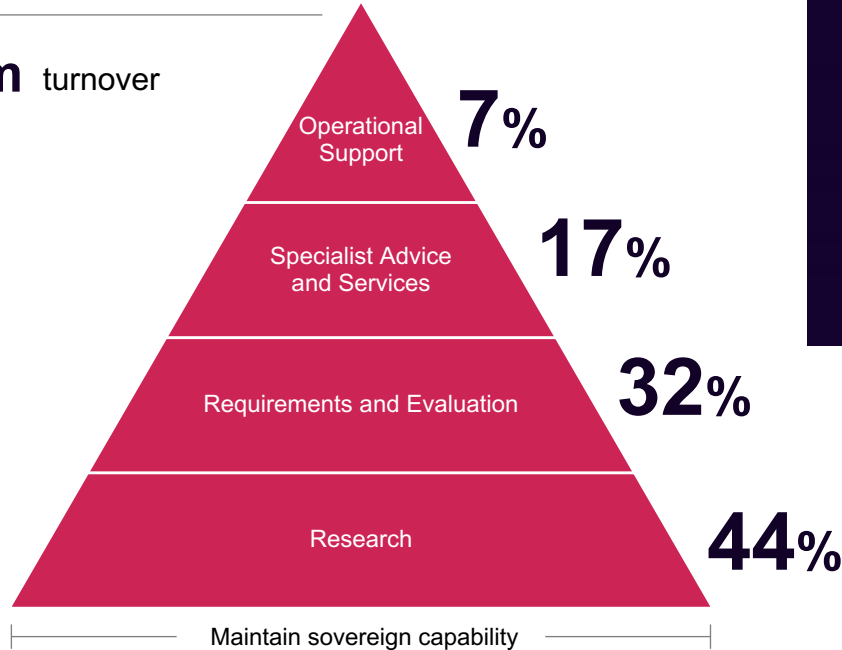
4,428 staff across 6 sites



£321m spend with industry



£703m turnover



Delivering high-impact S&T for the UK's defence, security and prosperity





Operational Research



Electromagnetic Activities



AI & Data Science



Space Systems



Human & Social Sciences



Explosives & Energetics



Robotics & Autonomous Systems



Strategic Systems



Weapons



CBR



Cyber



S&T Futures & Incubator



Survivability



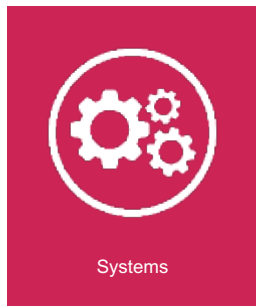
Communications & Networks



Sensing



Advanced Materials



Systems



Homeland Security & CT Systems



Air Systems



Land Systems



Above Water Systems



Underwater Systems



Information Systems



Operational Research



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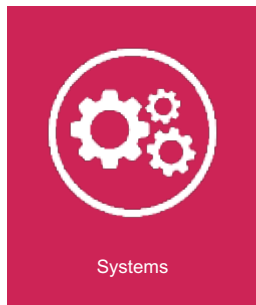
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Underwater Systems



Information Systems



Advise and support operations

Provision of reachback and deployed technical advice and support for CBR operations.



Improve medical outcomes

Improve the survival and recovery of casualties arising from CBR, conventional and non-conventional weapons and mitigate environmental and occupational stressors. Ensure MOD maintains its duty of care.



Understand and anticipate threats

Understand current and future CBR threats, and the risks from emerging and disruptive technologies. Understand the implications for UK operations and the security and resilience of the UK.



Deter adversaries

Develop UK abilities to identify adversary activity, interdict and hold perpetrators to account to deter future use.



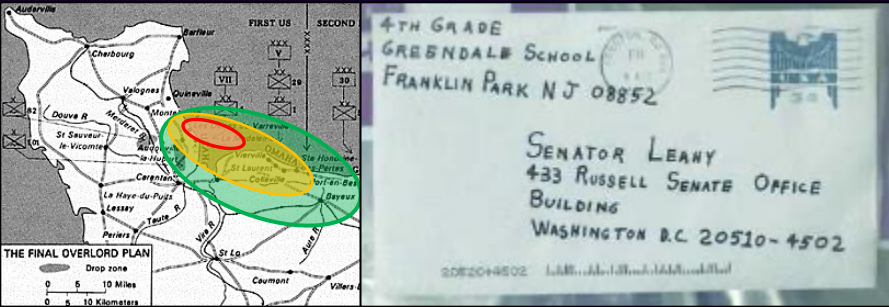
Test, evaluate and assure

Support the successful delivery, maintenance and assurance of CBR capability to Front Line Commands and Other Government Departments.



Develop novel capabilities

Develop transformational capabilities for the defence and security of the UK



Modelling, hazard assessment, advice



Physical protection



Medical countermeasures



Detection and diagnosis

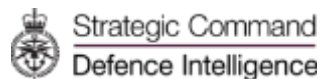


Decontamination



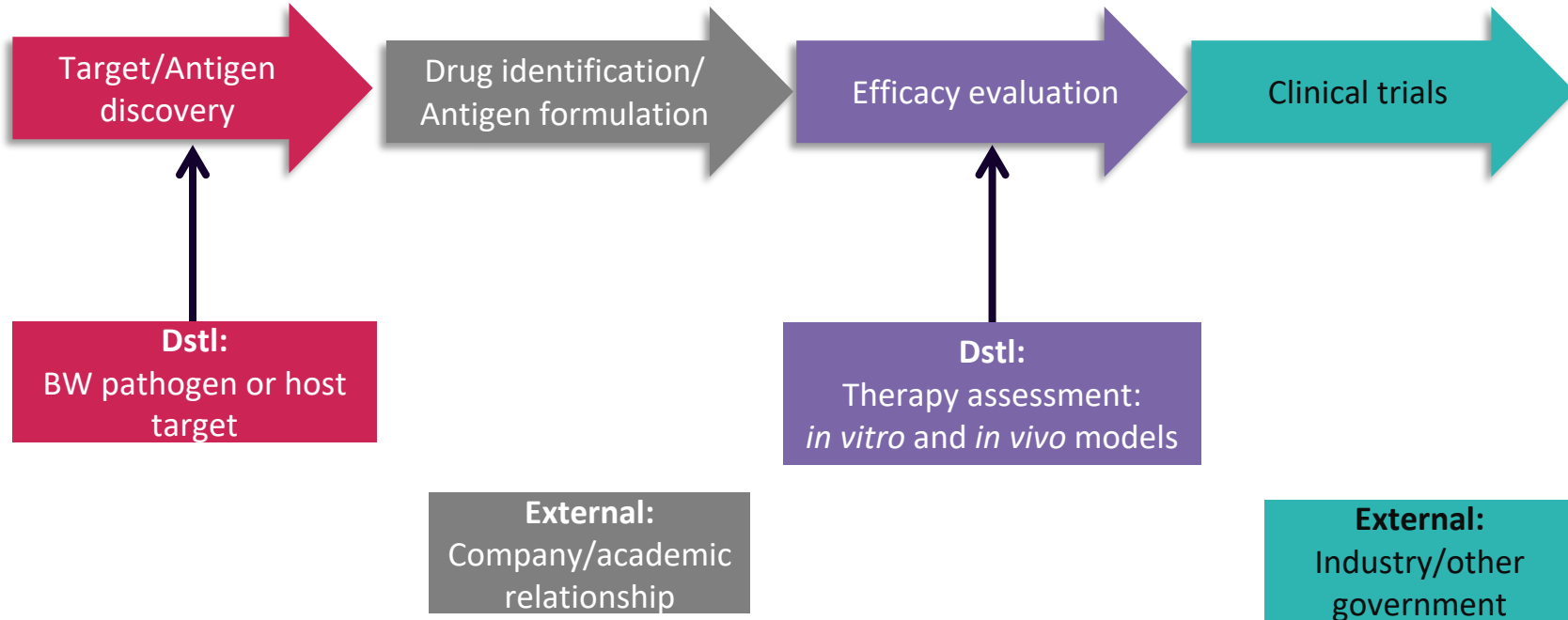
- State of the art facility
- Handling and manipulation of high-containment pathogens
 - Containment level 2, 3 and 4 laboratories
 - Experimental laboratories
 - Animal laboratories
 - Animal models of disease at all containment levels including mice and marmosets

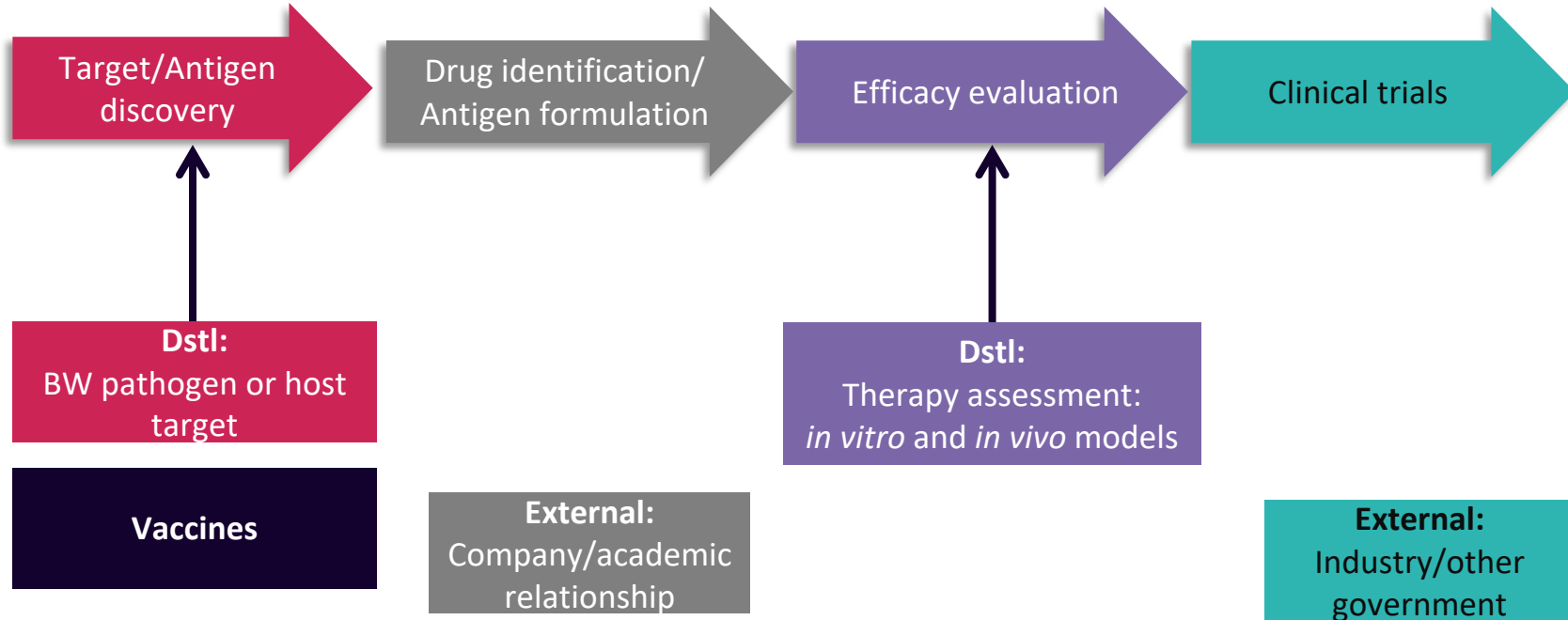




Global Affairs Canada







■ ***Coxiella***

- Preparing and assessing Q-Vax, LPS, synthetic CHO and Virus-Like-Particle delivery of *Coxiella* antigens
- Bioconjugate *Coxiella* vaccine

■ ***Brucella***

- Vaccine based on a carbohydrate-protein vaccine.

■ ***Francisella***

- Sugar and protein vaccine research.

■ ***Burkholderia***

- Conjugate vaccine research
- Planned combination therapy for antibodies or vaccines with antibiotics.

■ ***Yersinia***

- Joint projects with US DoD and UK research councils.
 - Subunit based approaches.



Australian Government
Department of Defence

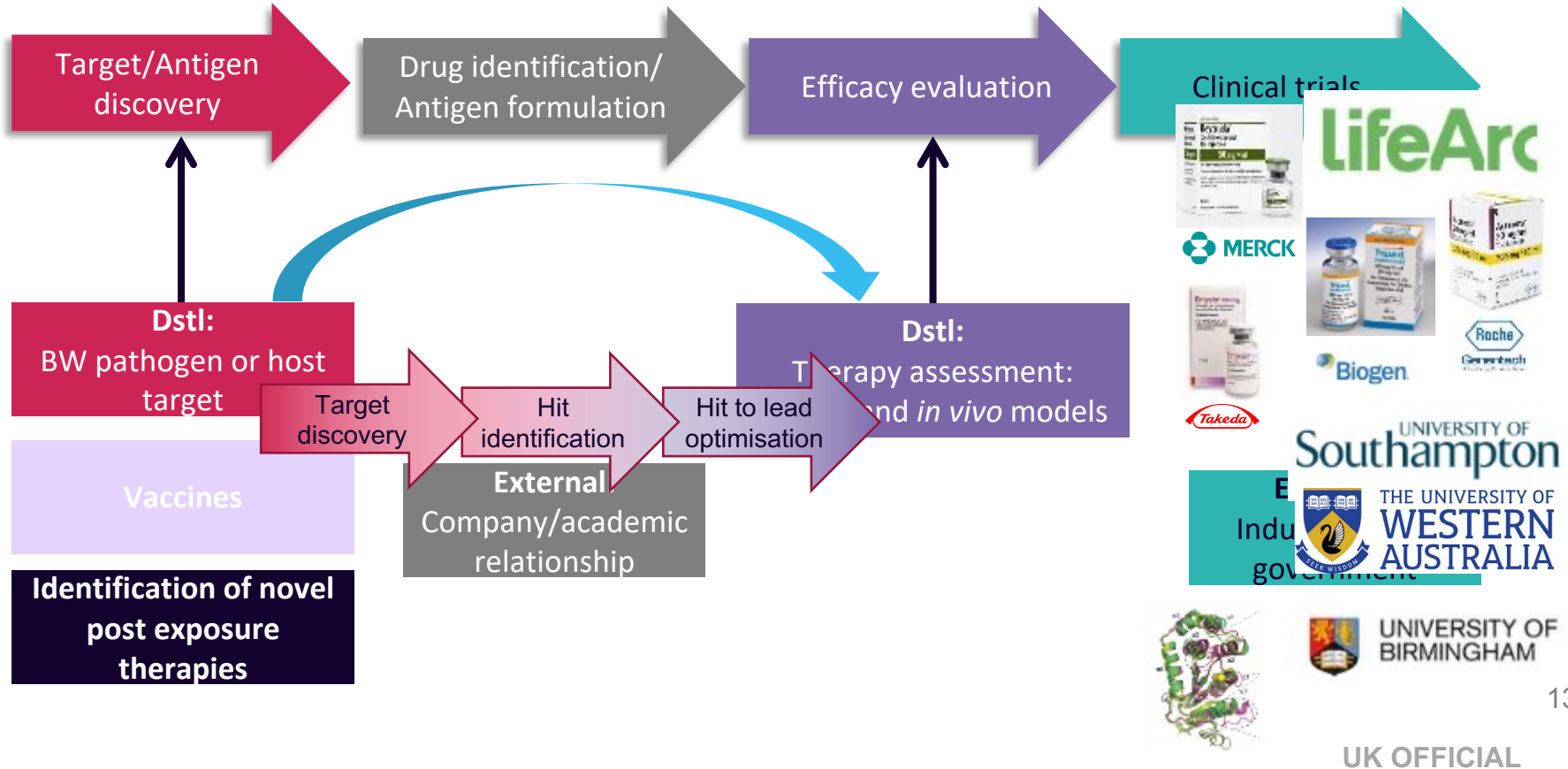


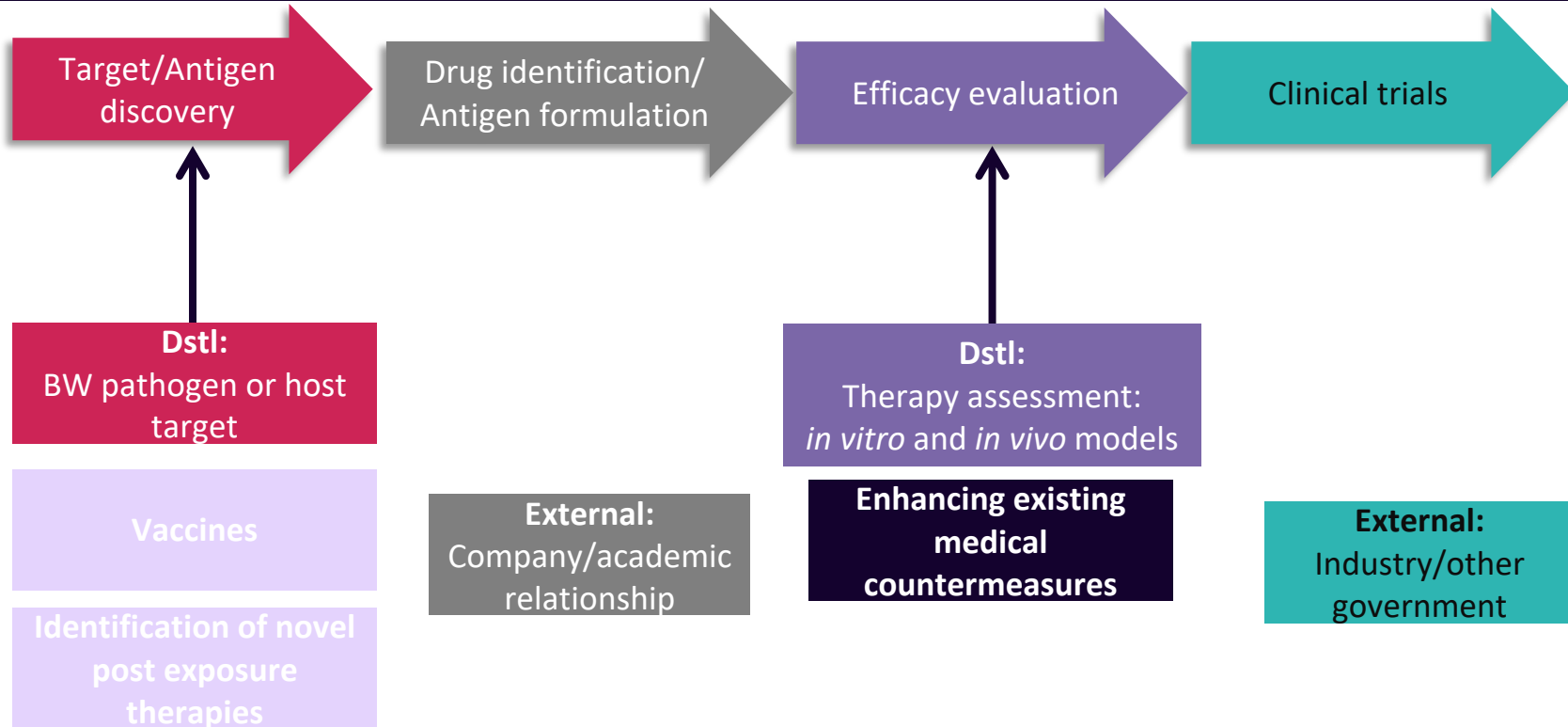
Public Health
England

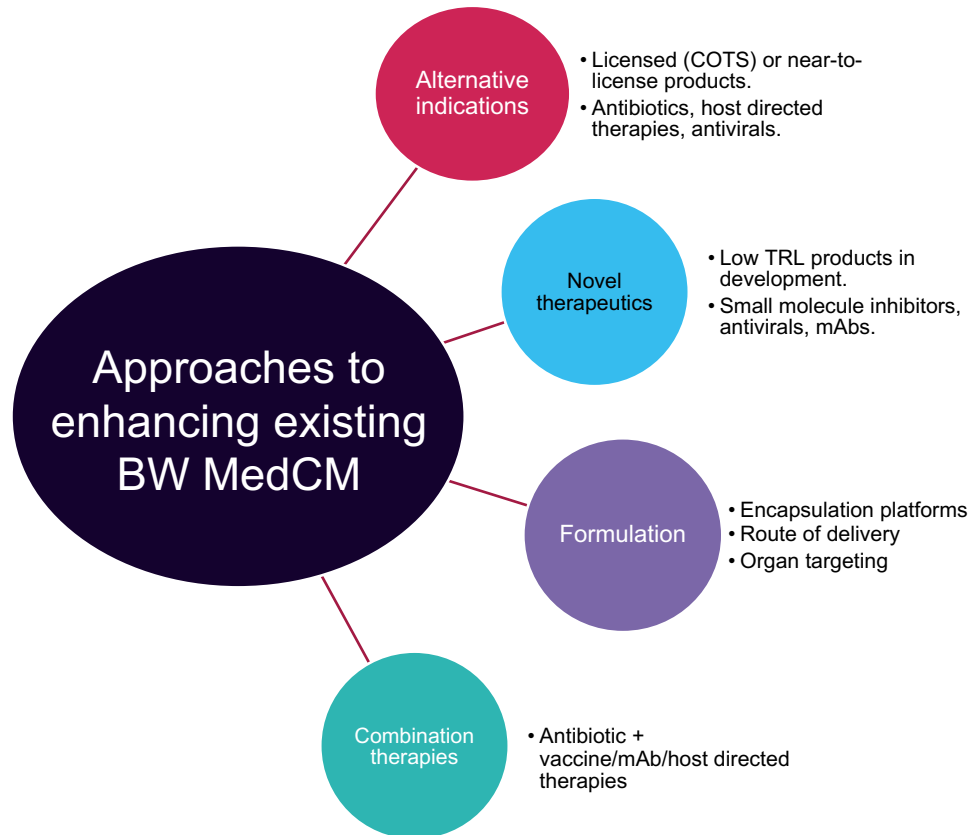


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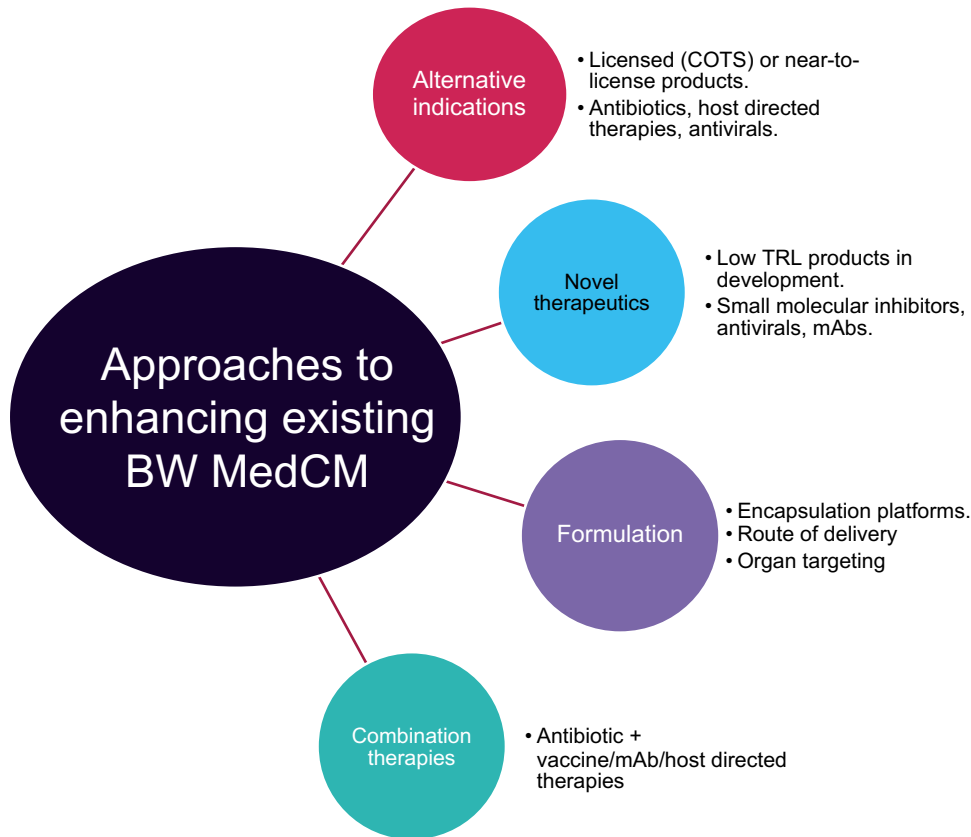
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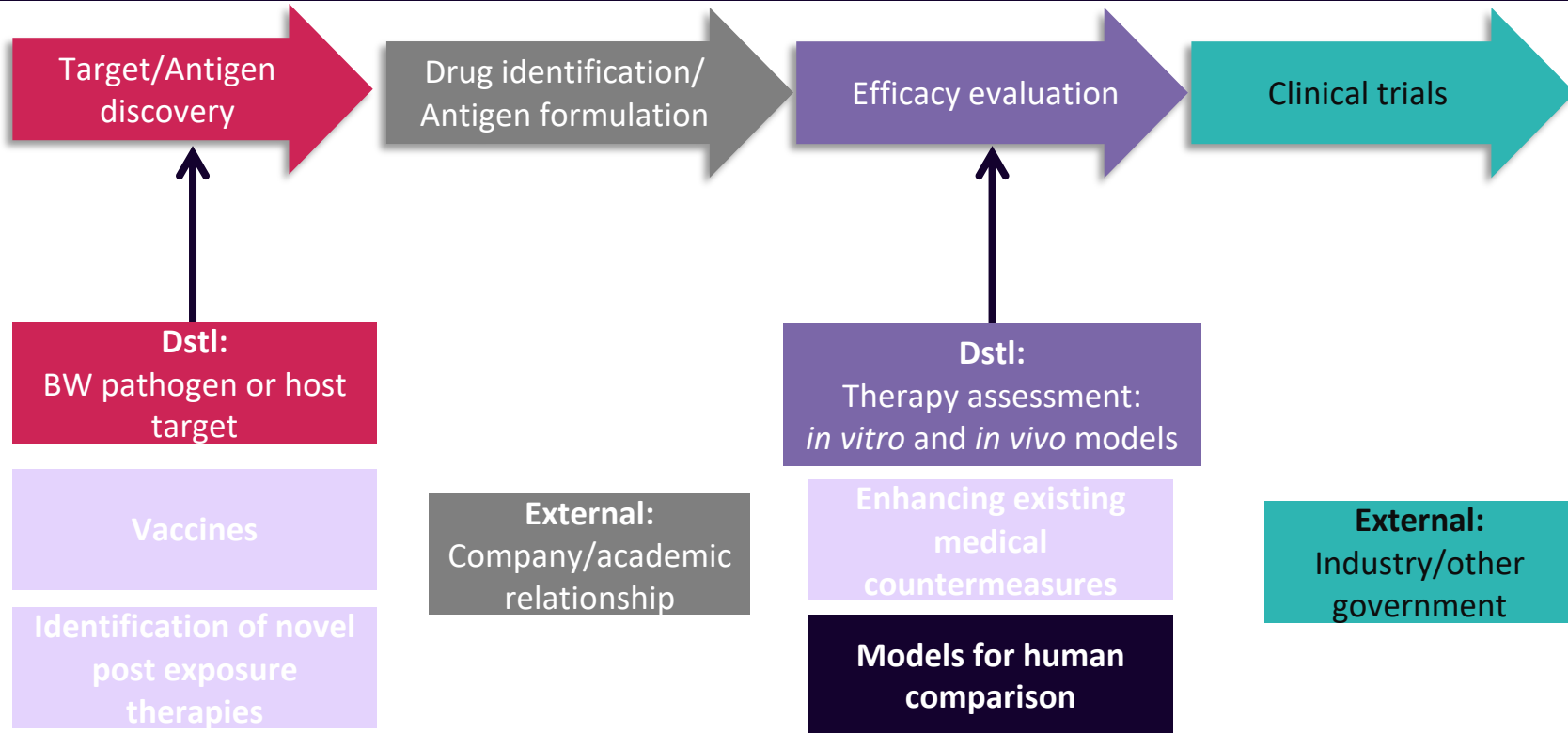




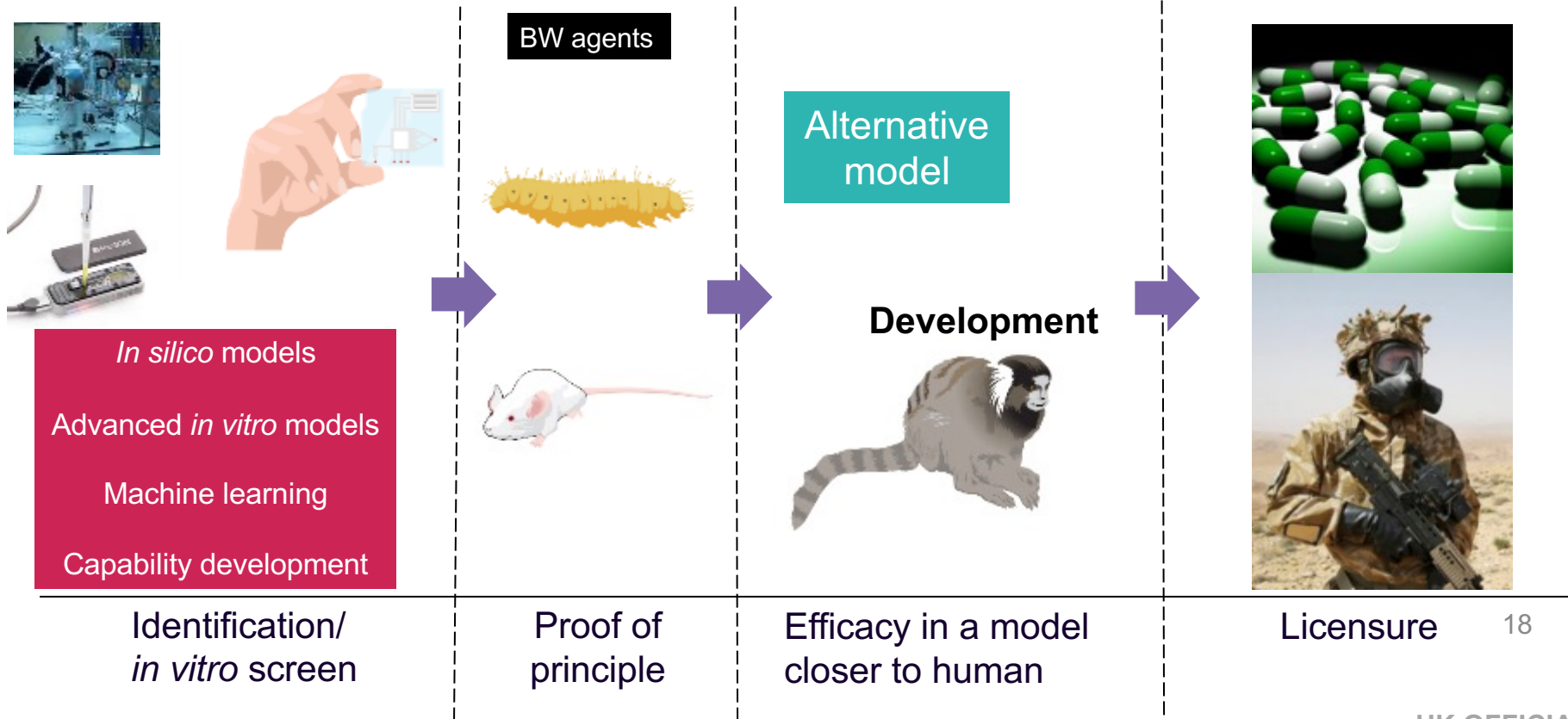


Enhancing existing MedCM





Global Issues CBRN policy: Med CM should be broad spectrum and where practicable licensed for use.



Marmoset models:

- Ebola virus
- Marburg virus
- *Burkholderia pseudomallei*
- *Burkholderia mallei*
- *Bacillus anthracis*
- *Francisella tularensis*
- *Coxiella burnetii*
- MERS-CoV

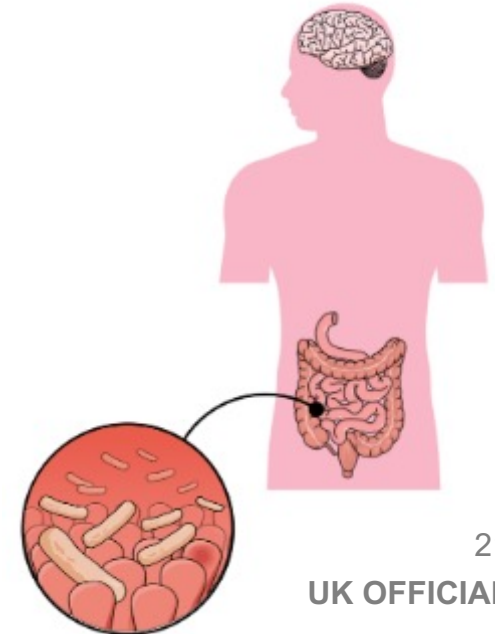


- Bacteria and viruses from Hazard group 1 to 4 (unique capability)
 - Operational and emergency response
- Aerosol generation and manipulation
- Genetic manipulation of dangerous pathogens
- Exposure of animals to aerosols in high containment
 - Animal model development
- Downstream analysis
 - Immunology, molecular biology and imaging

- Human performance / augmentation
 - Enhancement, recovery, detrimental effect
 - PhDs funded
- Health
 - Gut
 - Nasal
 - Skin (wound infection/ healing)
 - Air (microbial composition in the air we breathe)
- Animal models
- Technology watch
 - Lot of research in this area

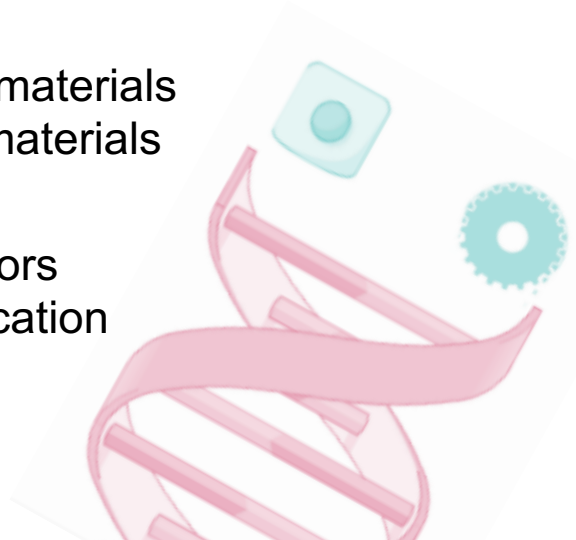


UNIVERSITY OF
Southampton



Challenges

- Power
 - Novel non-battery paradigms
 - Disposal, recyclind and remediation
 - Feedstocks and fuels
- Materials
 - Functional materials
 - Structural materials
- Sensing
 - Novel sensors
 - Novel fabrication



Examples

- Power
 - Place and forget technologies
 - Biogeneration and energy harvesting
 - Waste into power
- Materials
 - Fire resistance
 - anti-fouling, anti-corrosion
- Sensing
 - Biomimetic (e.g. olfactory)
 - Bioengineering

[dstl] The Science Inside

Discover more

