

Infection Detection at Point-of-Care

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15th January 2020



Public Health
England

Keep

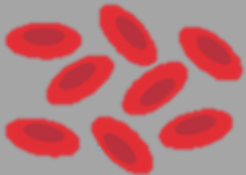


Working

Sepsis – UK Key Facts



**Early
identification
is key**



**Early blood cultures
and antibiotics
increase survival**



**ITU beds for patients with
sepsis costs the NHS
2.5 billion pounds per year**

70%  **30%**

Sepsis cases arise in the community and in hospital



**4 out of 10 people with
sepsis die**



WORLD SEPSIS DAY INFOGRAPHICS



A GLOBAL HEALTH CRISIS



27 000 000 - 30 000 000 people
per year develop sepsis



7 000 000 - 9 000 000 die
- **1** death every **3.5** seconds



Survivors may face
lifelong consequences

Infographic 2/21



Global
Sepsis
Alliance

www.world-sepsis-day.org
www.global-sepsis-alliance.org

September | World
13 | Sepsis
2018 | Day

Recognizing Sepsis as a Global Health Priority

Promote research to develop innovative means to prevent, **diagnose**, and treat sepsis.

Include sepsis as a **priority research area** for funding bodies and commissioned research.

What Do We Need?

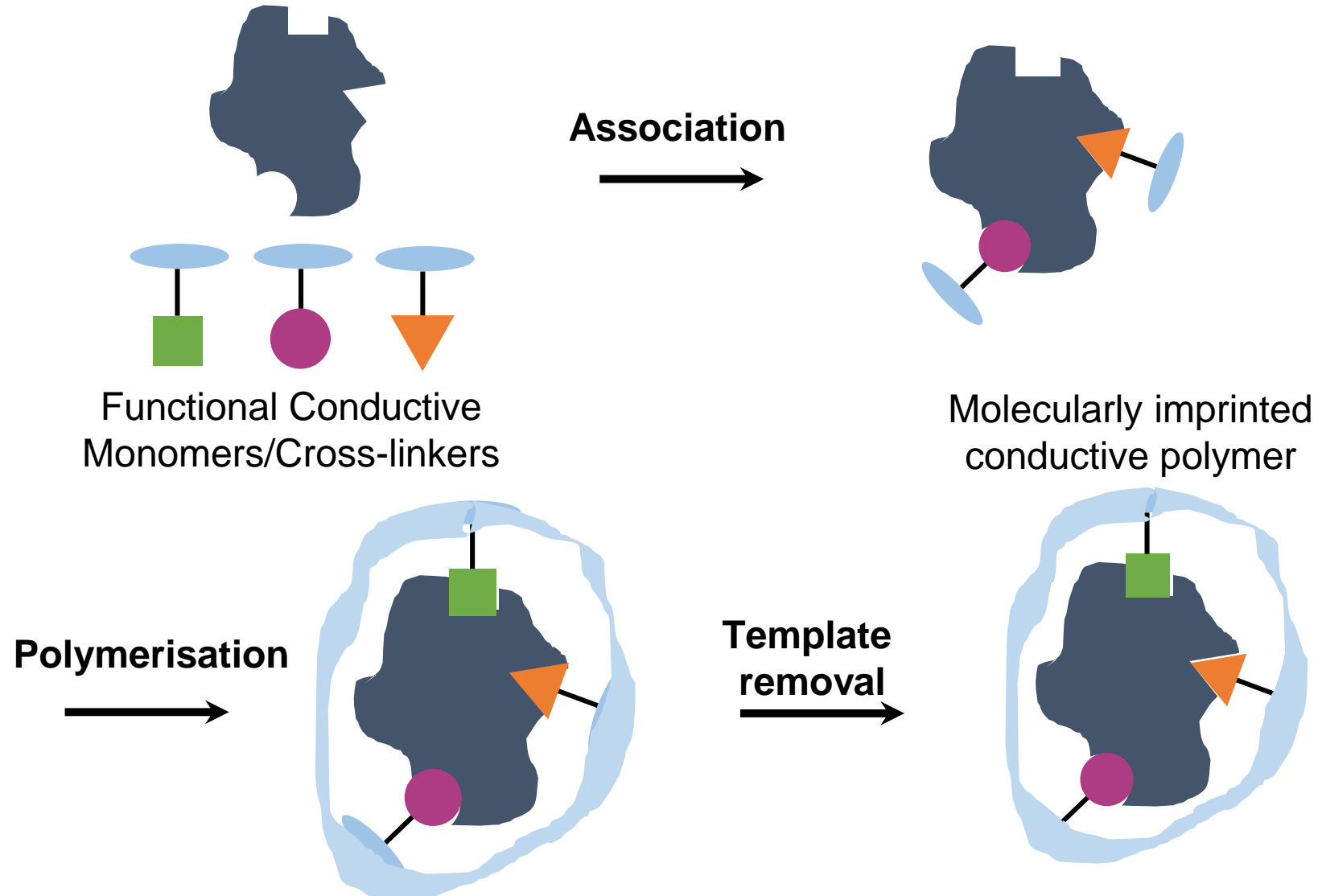
Diagnostic tools:

1. **Detect Early and Rapidly**
2. **Are Accurate**
3. **Simple to Use and Interpret**

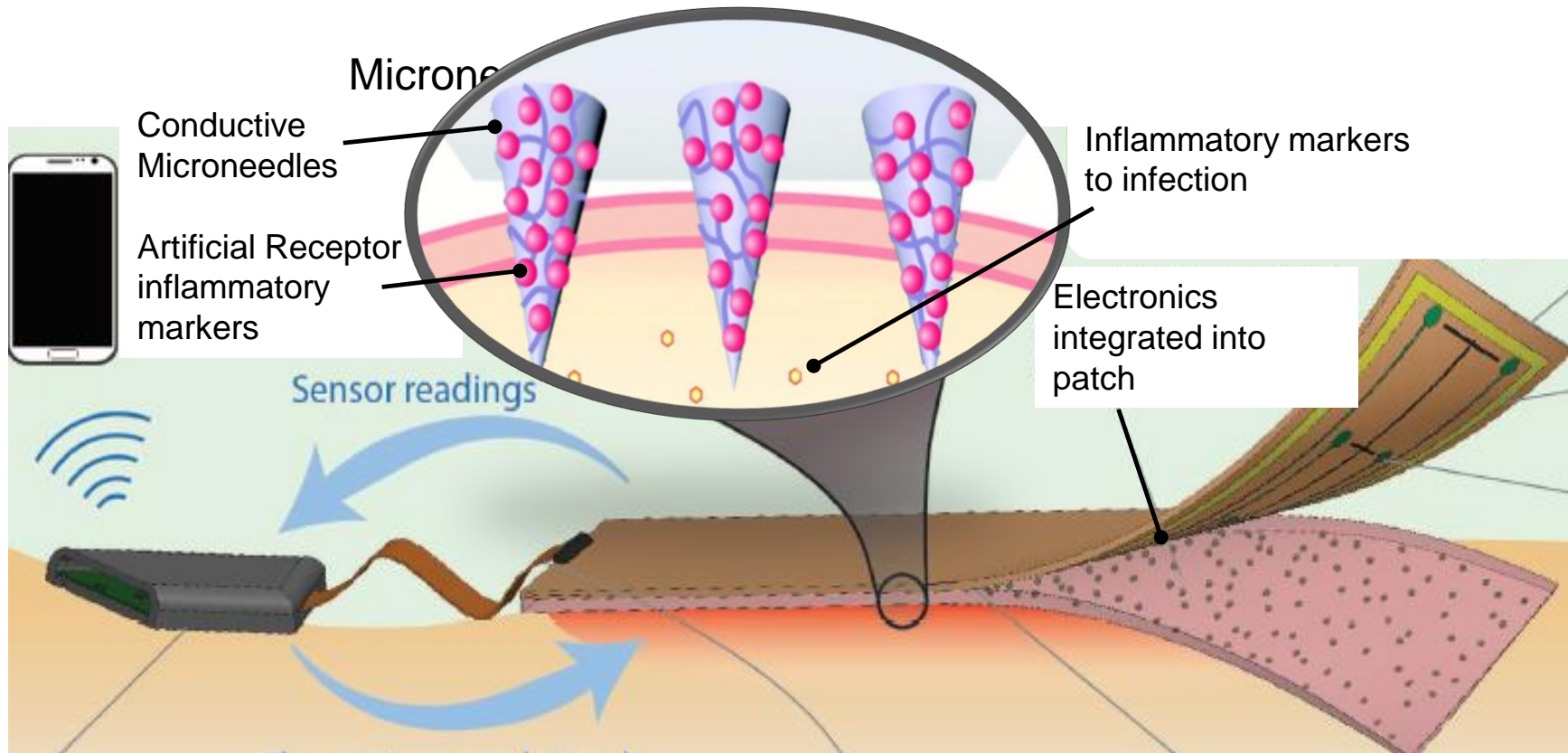
- Design **molecularly specific** conductive materials as **artificial receptors** to target and detect specific inflammatory markers.
- Develop **minimally invasive** patch diagnostics by engineering microneedle and nanoneedle arrays for **point-of-care devices**.

Artificial Receptors

Inflammatory Biomarker Template



Microneedle Patches



Benefits of Microneedle Arrays

- Easy to use
- Less-invasive
- Affordable
- No refrigeration
- Home use

Benefits of Imprinted Polymers

- Affordable
- Reproducible
- Sensitive
- No refrigeration
- Conductive

- **Early, precise and rapid detection of infection** at point-of-care is crucial to relieve the burden of sepsis and fight antimicrobial resistance.
- By utilising **material design at the molecular level** we can engineer materials to detect specifically for inflammatory markers of infection.
- Integrating these materials into **minimally invasive patches** will enable point-of-care early and rapid detection – applicable to **all settings**.

Acknowledgements



Yasmine Mustafa

Joseph Turner

Harindi Jayakody

Dr Pedro Estrela

Dr Despina Moschou

Dr Michael Thatcher (Abbott)



Thank You for Listening!

