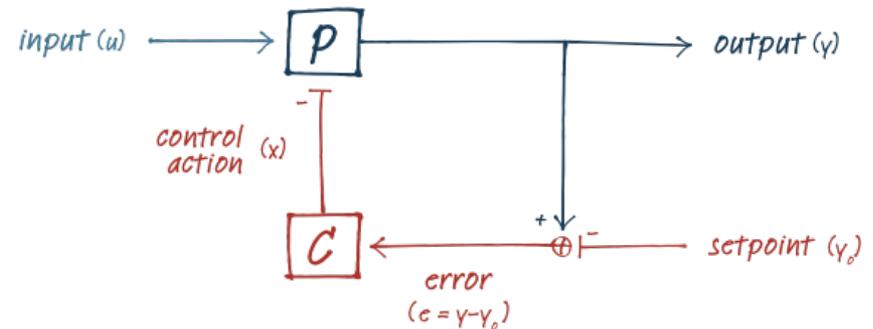
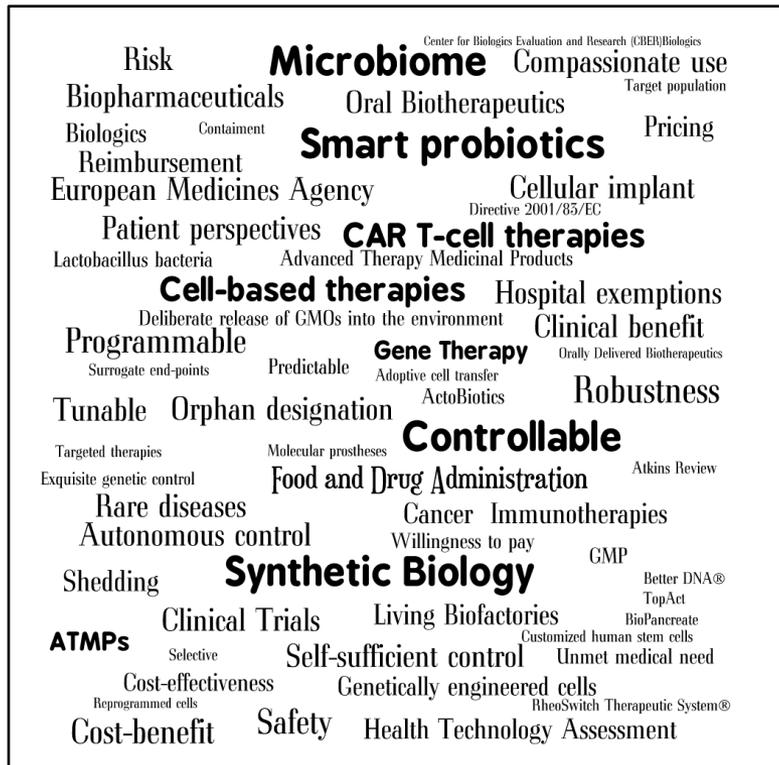


# Workshop on the prospects for controllable cell-based therapies

## City University, 22-23 February 2016



Closed-loop cell-based therapies:  
“the cell will see you now”

# Group discussions: on ‘smart probiotics’ for the treatment of PKU

1. What are the risks and benefits?  
More broadly, what are the advantages and disadvantages?
2. **What questions need to be asked and answered before we can come to a conclusion about the balance between advantages and disadvantages?**
3. Who is best placed to help answer those questions?
4. Who should decide whether this is a good approach to pursue?  
On what basis?

**Consider what you have heard from Alison Silva and Eric Lange, and the additional materials supplied:**

- Newstory from Xconomy dated 17/02/2016: *Synlogic Nabs \$40M, Prepares To Put Modified Microbes Into Patients*
- NSPKU’s leaflet for parents
- NSPKU’s poster” 10+1 steps to success for PKU
- Life with PKU: Kevin’s story and Kate’s story



# Reprogramming microbes to combat pathogens

Bacteria can be genetically programmed to deal a knockout blow to pathogens

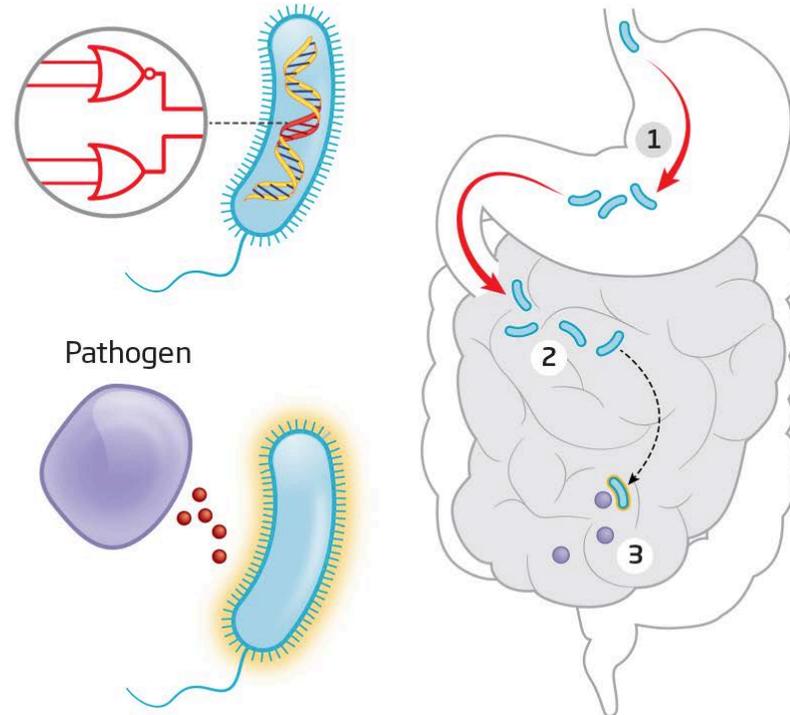
1) *E. coli* cells containing "circuitry" for specific behaviours head to the gut after being swallowed



2) The modified bacteria travel through the gut, on alert for pathogens



3) When they encounter a pathogen, the DNA circuitry activates and the *E. coli* produce a payload of molecules to kill it off



# Group discussions on: reprogramming microbes to combat pathogens

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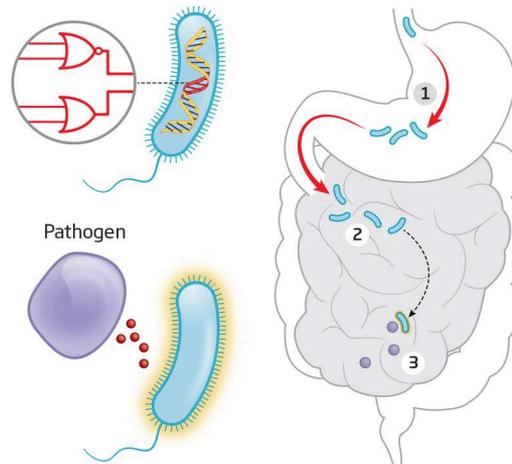
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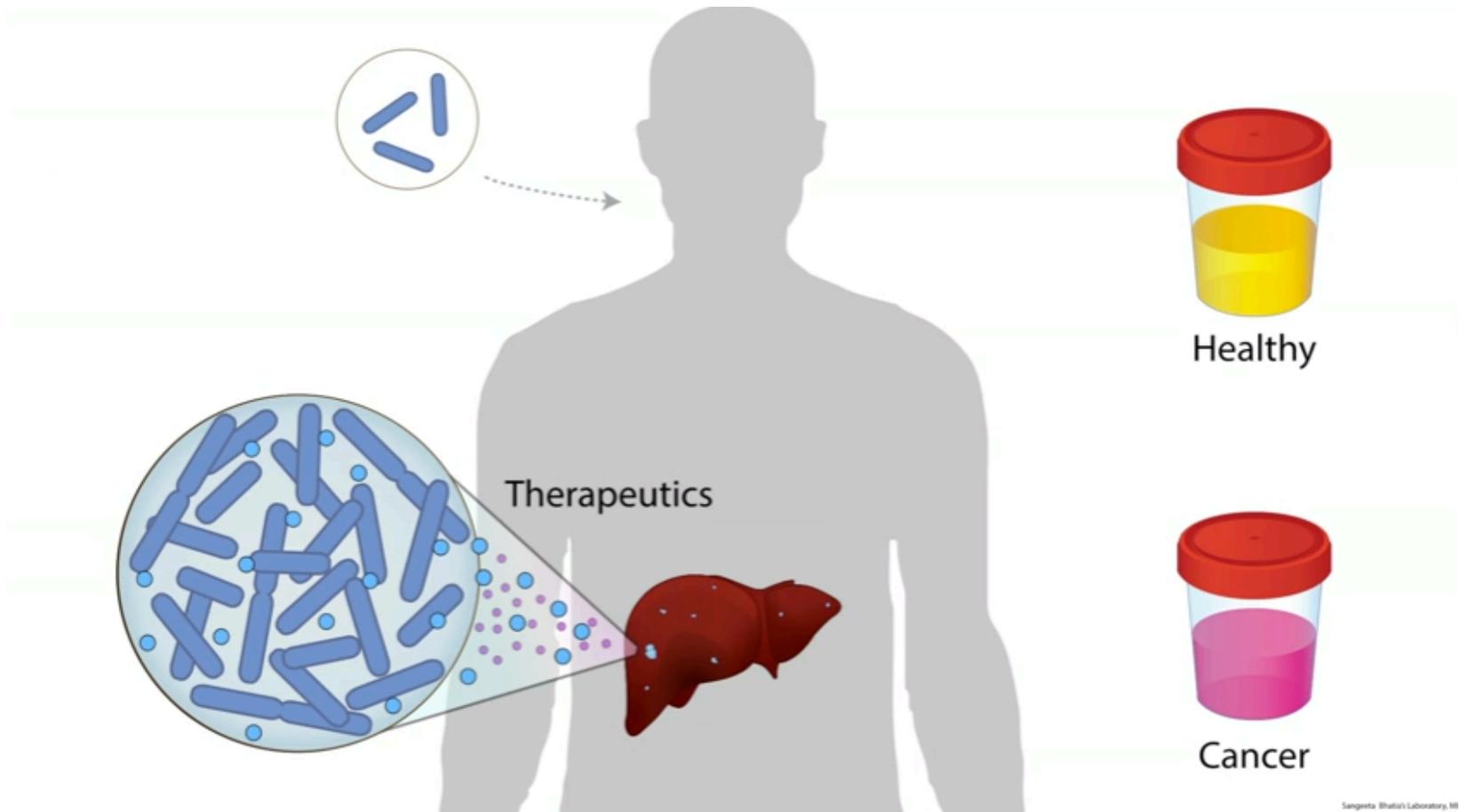


3) When they encounter a pathogen, the DNA circuitry activates and the *E. coli* produce a payload of molecules to kill it off



**e.g. to combat cholera in humanitarian disaster emergency situations?**

# Engineering microbes to target tumours



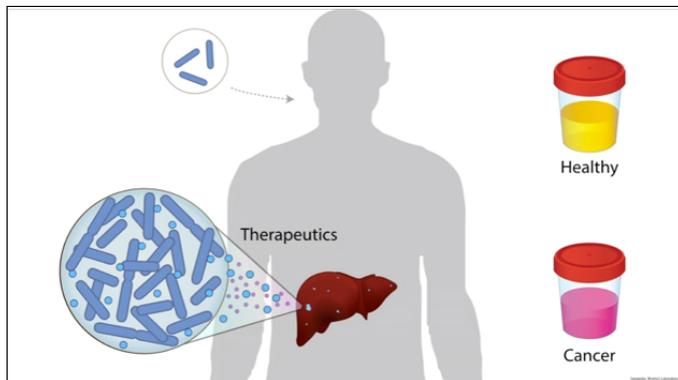
Sangeeta Bhatia's Laboratory, MIT

Source: TED2015 talk by Tal Danino 'Programming bacteria to detect cancer (and maybe treat it)'

# Group discussions on: engineering microbes to target tumours

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On what basis?

Consider different perspectives from Public, Patients, Carers, Survivors....



Source: TED2015 talk by Tal Danino  
'Programming bacteria to detect cancer (and maybe treat it)'

Wordcloud: words that describe "patient experience" from training workshop for Patient and Family Advisory Council of Cancer Care Ontario