

# Defeating dementia: progress and challenges on the road to 2025

## **Technology panel**

**Moderator: Vivienne Parry**  
Science Journalist & Broadcaster

#DefeatingDementia

# Defeating dementia: progress and challenges on the road to 2025

**Vaibhav Narayan**

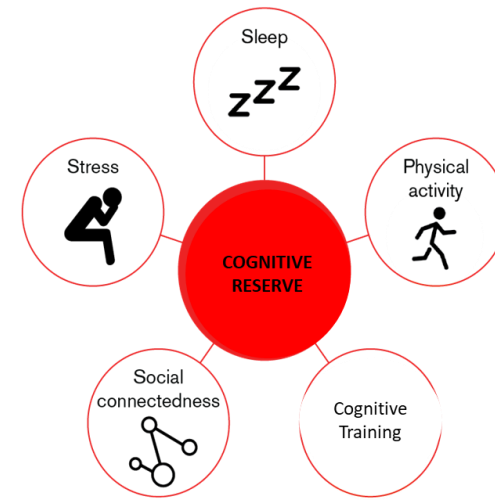
Vice-President, Research Technology, Janssen Pharmaceuticals

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# Technology Solutions in Dementia



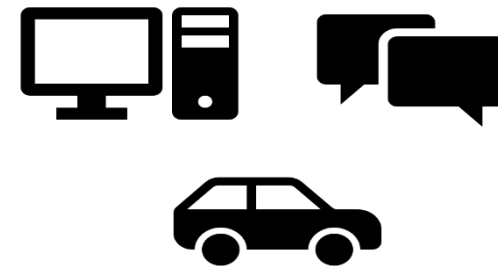
Risk Assessment, Early Diagnosis



Track and Improve Brain Health and Resilience



Apps and devices to promote independent living and reduce care-giver burden



Passive measures to track impact on daily function: demonstrate individual benefit, and improve adherence to interventions

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**Brad O'Connor**

CEO, Cogstate

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# Barriers to cognitive assessment in Primary Care: Can we harness technology to improve outcomes

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1

## SKILL GAP

Not all primary care physicians are trained and/or confident in diagnosing

2

## TIME GAP

Cognitive assessment is time intensive

3

## STANDARDS GAP

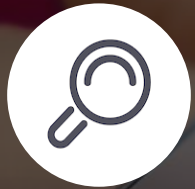
Lack of consensus on the appropriate tools to detect and diagnose cognitive impairment

4

## REIMBURESMENT GAP

Lack of support by global health systems...  
**COVERAGE & PAYMENT**

# Leveraging Technology to Realise Effective Cognitive Assessment Tools for Primary Care



## SENSITIVITY

High sensitivity and specificity in AD and prodromal disease



## EASE OF USE

Standardised, rapid, self administration and/or non-expert administration, EHR integration



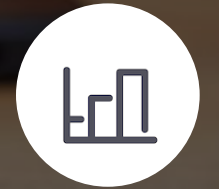
## CULTURALLY NEUTRAL

Available in all languages and appropriate for any level of education



## IMPAIRMENT & CHANGE

Measure impairment on single assessment but also measure change over time



## CLINIC & TRIALS

Adoption in primary care & research studies, allowing payers to measure treatment effect data in individuals

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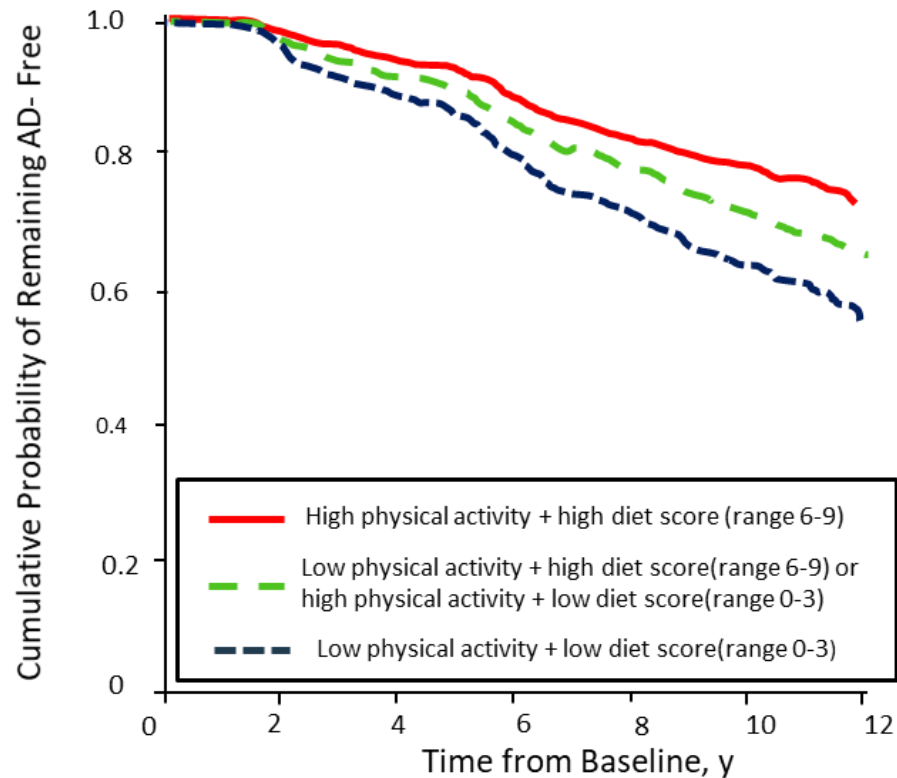
**Dr Iain Simpson**

Principal, QL Consulting

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# Adherence

## Lifestyle



Scarmeas et al (2009) *Physical Activity, Diet, and Risk of Alzheimer Disease*; JAMA 302(6): 627–637. doi:10.1001/jama.2009.1144.

## Medication

### Adherence and tolerability of Alzheimer's disease medications, a randomised controlled trial

50% discontinued or did not initiate the treatment they were randomized to

# 1 Reason for discontinuation: adverse events



56% of non-adherent patients

# 2 Reason for discontinuation: cost



29% of non-adherent patients

Adherence did not differ by type of acetylcholinesterase inhibitors



Donepezil 39%  
Galantamine 53%  
Rivastigmine 59%

Campbell. et al. J Am Geriatr Soc (JAGS). 2017

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GERIATRICS SOCIETY

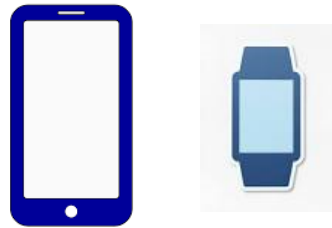
### Causes of Non Adherence in Chronic Disease

- Patients' personal connection with a pharmacist or pharmacy staff
- How easy it is for them to afford their medications
- The level of continuity they have in their health care
- How important patients feel it is to take their medication exactly as prescribed
- How well informed they feel about their health
- The extent to which their medication causes unpleasant side effects

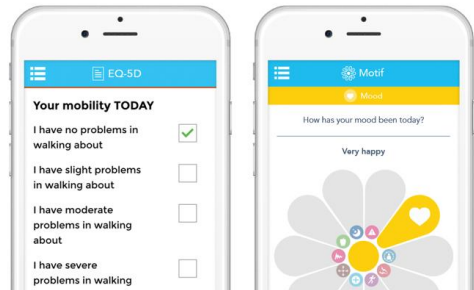


# Technology - Measure and Support

## Smartphones/watches



Reward and incentivisation  
<https://healthprize.com/>



Data collection and feedback  
<https://www.umotif.com>

12/14/2018

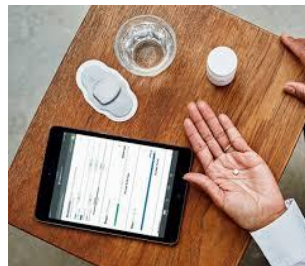
## Wearables/ Connected Technology



<https://axivity.com/>

<https://www.actigraphcorp.com>

<https://www.withings.com>



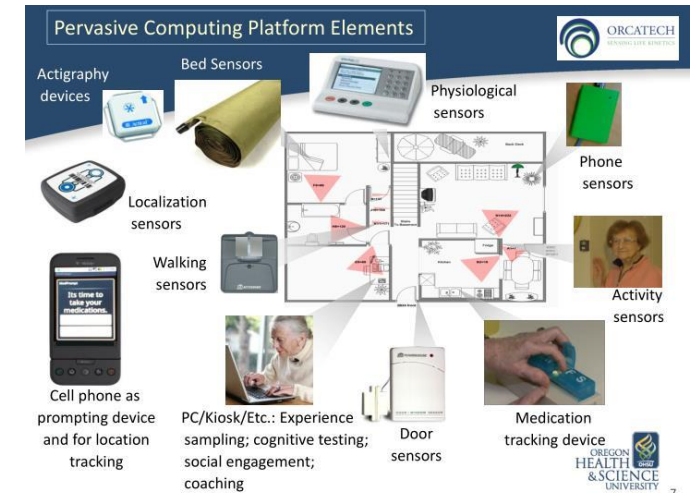
Smart Pill  
[www.proteus.com](http://www.proteus.com)



Smart Pill Dispensers  
[https://en.wikipedia.org/wiki/Pill\\_reminder](https://en.wikipedia.org/wiki/Pill_reminder)

Iain Simpson

## Pervasive/ Ubiquitous Computing



<https://www.ohsu.edu/xd/research/centers-institutes/orcatech/>



<https://www.irc-sphere.ac.uk/research>

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**Maxine Mackintosh**

Doctoral Student, Alan Turing Institute, UCL

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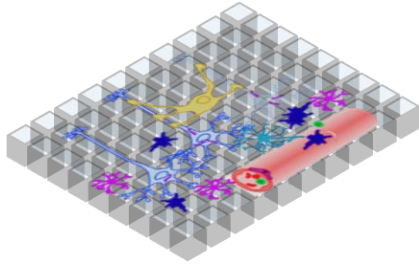
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**Dr Peter Peumans**

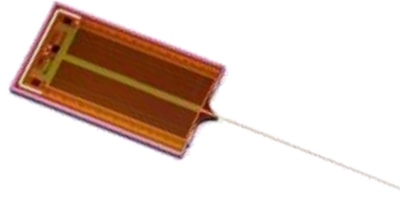
Senior Vice President, Life Science Technologies, IMEC

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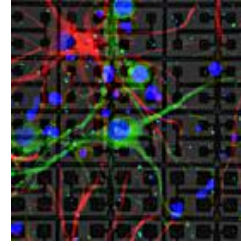
# Research



Spatial omics



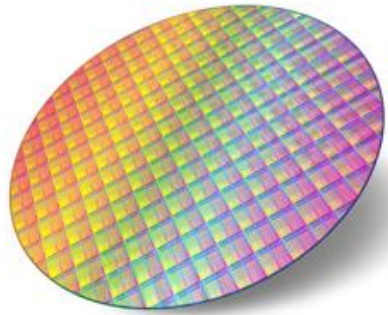
Invasive neuroprobes



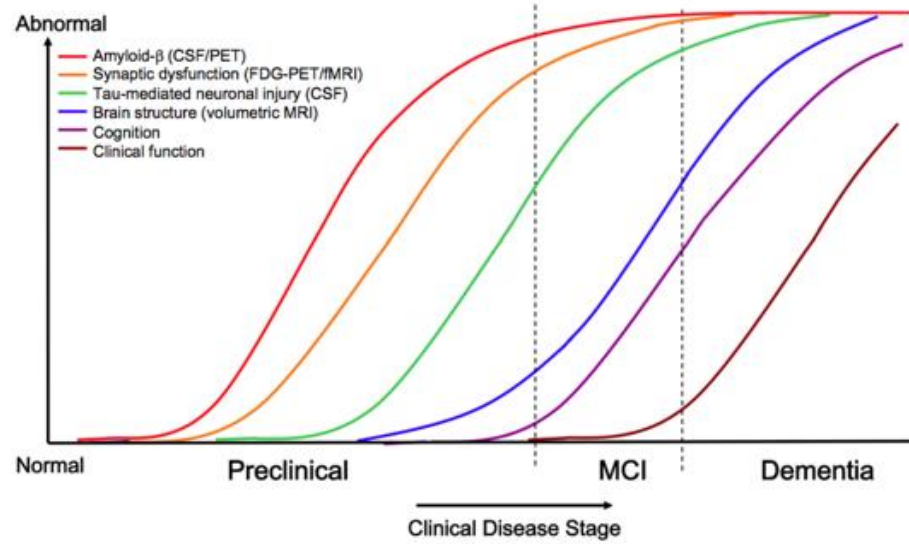
Brain-on-chip



BMI



Commodity semiconductor manufacturing

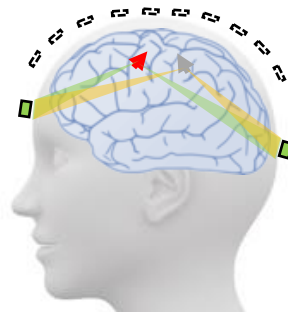


Commodity computing and data

# Clinical/Care



Point-of-Need Dx



BMI



Wristbands



Patches

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## **Questions?**

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