

Advancing the Precision Health Initiative in Canada

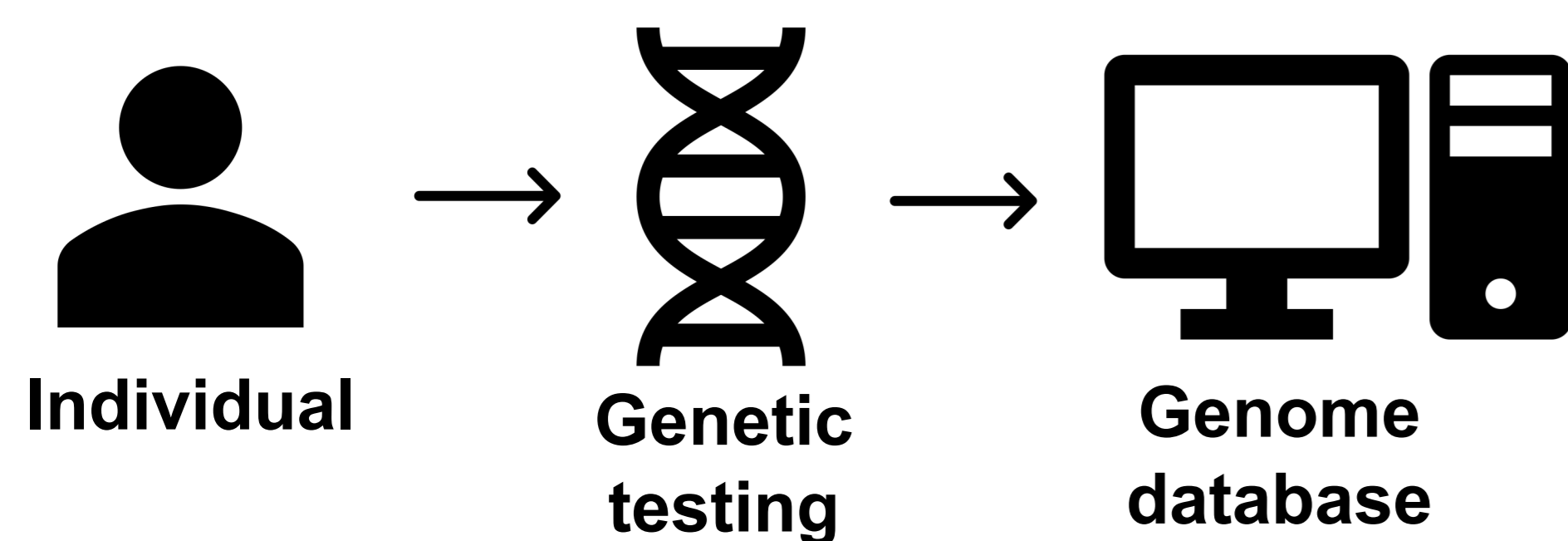
Olivia O. F. Williams, PhD

In neuroscience, many current treatments are based on behavioural observations; what if they were based on biological changes?

Policy

The Canadian government has created the Precision Health Initiative (\$200 million CAD)¹

- Build a genome database
- Improve diagnosis and therapeutics
- Integrate genomics into healthcare
- Use AI to assess risk



Global Comparison

- United States (~\$650 million CAD)
 - All of Us²
- United Kingdom (~\$363 million CAD)
 - UK Biobank whole genome project³
- Israel (~\$440 million CAD)
 - National Digital Health Strategy⁴

Pharmaceutical companies

Self-reported database⁷

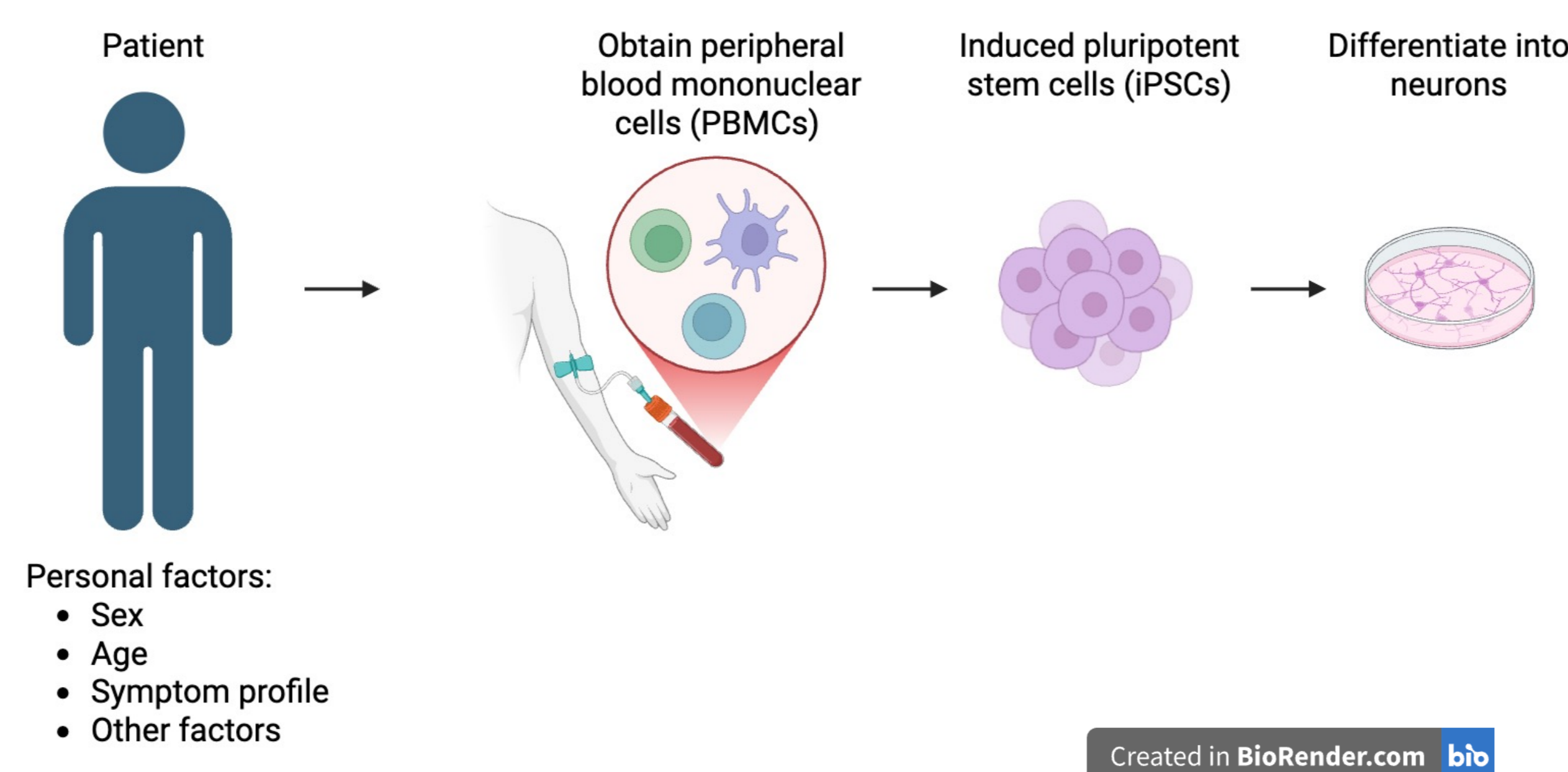
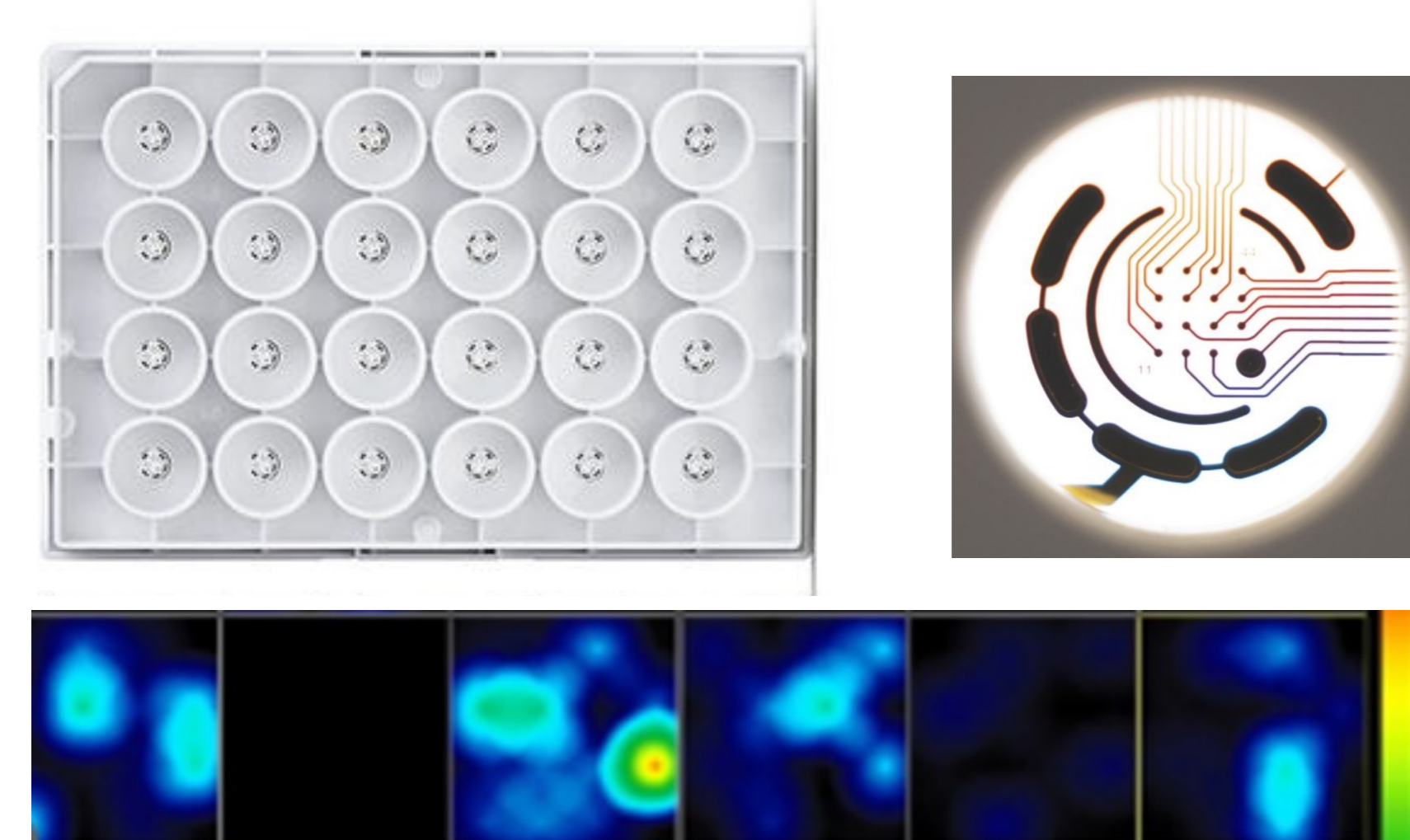
- Israeli company
- Individuals can self-report what therapy works based on their diagnosis
- Report symptoms
- Potential to identify specific therapies based on varying symptom profiles

Biotechnology company⁸

- Israeli company
- Grows neurons from patients
- Assess neuron morphology to suggest personalized treatment options

P234. Precision Psychiatry Using Human Induced Pluripotent Stem Cell (hiPSC) Derived Neurons: Assessing Synaptic Connectivity as a Biomarker for Drug Response
Talia Cohen Solal*, Claudia Albeldas, Liza Rabkina, Moria Ben Yishai, Etya Aloni, Orit Goldman, Daphna Laifenfeld

Enabling Medical Technology - Novel Hypothesis



Grow differentiated neurons on electrodes⁹

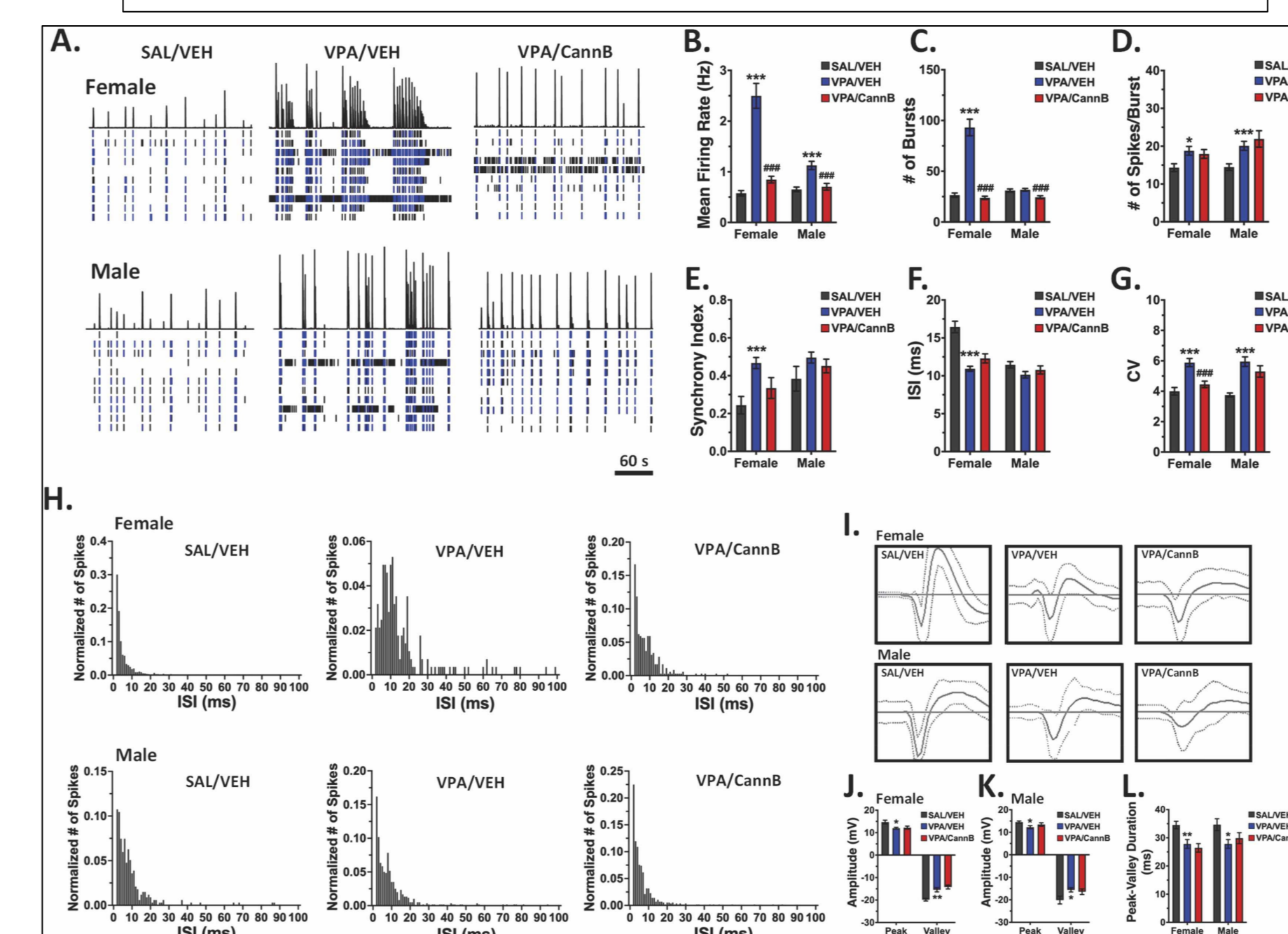
- Identify neural activity changes
- Correlate to symptom profiles
- Assess therapeutic options

Medical technology⁹

- U.S.A. company
- Grow neurons on electrodes *in vitro*

Cannflavin B ameliorates behavioural and neuronal systems alterations in adolescent rats exposed to prenatal valproic acid

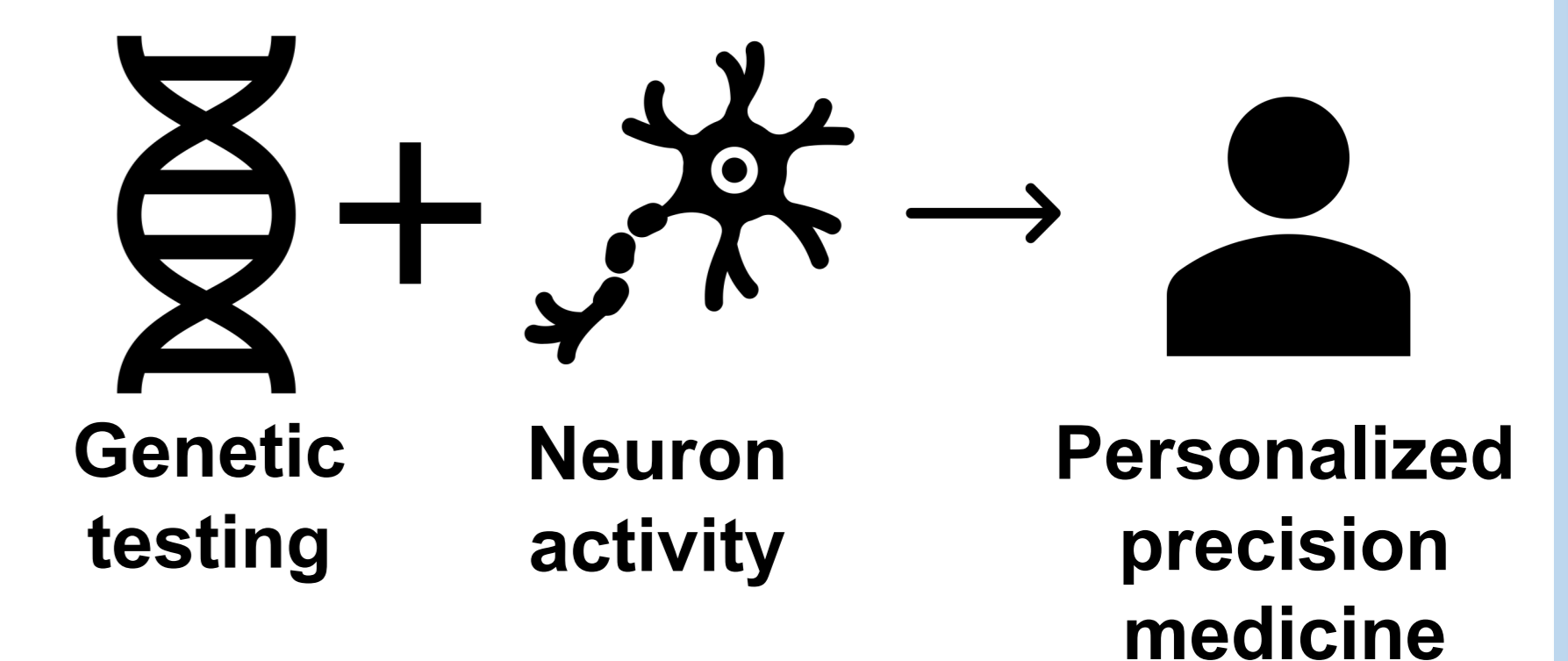
Olivia O.F. Williams^{1,2}, Madeleine Coppolino³, Joshua D. Manduca^{1,2,3}, Taylor C. Demers⁴, Paula T. Henry-Duru⁴, Takan C. Mueller⁵, Eric Soubeyrand^{1,2}, Colby J. Perrin⁶, Tariq A. Akhtar^{1,2}, Melissa L. Perreault^{1,2,3}



Williams et al., 2026¹¹

Public policy impact

- Neuropsychiatric disorders are one of the leading causes of disability in Canada
- Diagnosed based on behavioural symptoms
- Biomarkers
- Precision medicine strategies
- Incorporate genomic findings to transition to personalized care



References

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11. Williams, O. O., Coppolino, M., Manduca, J. D., Demers, T. C., Henry-Duru, P. T., Mueller, T. C., ... & Perreault, M. L. (2026). Cannflavin B ameliorates behavioural and neuronal systems alterations in adolescent rats exposed to prenatal valproic acid. *Biomedicine & Pharmacotherapy*, 195, 118949.