BIOGRAPHICAL SKETCH

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NAME: David Isaac Finkelstein

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Professor, Head of the Parkinsons Disease Laboratory

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
LaTrobe University (Melbourne Australia)	B.Sc	1979	Zoology, Genetics
Swinburne Institute of Technology University (Melbourne Australia)	Grad Dip Appl Sci	1981	Electronics. Instrumentation
Monash University (Melbourne Australia)	M.Sc	1985	Physiology, Neuroscience
Monash University (Melbourne Australia)	Ph.D.	1991	Physiology, Neuroscience
Alfred Hospital, Department of Neurology (Melbourne Australia)	Post Doc Fellowship	1991-93	Electrophysiology

A. Personal Statement

Career summary: Since graduating with a PhD in Physiology, I have worked to translate knowledge from fundamental science projects to provide clinical applications. Initially my research interests were centered on the physiology of movement control, age-related neurodegeneration and regeneration. I have subsequently used this basic science knowledge and applied it into developing novel therapeutic avenues for the treatment of Parkinson's disease and Parkinsonism.

Full List of Published Work in My Bibliography: https://orcid.org/0000-0002-8167-4917

I have authored more than 200 refereed journal reports, reviews and book chapters. I have been cited over 10,000 citations (Google Scholar), h-index 57 (Google Scholar), with 700 citations per year over the last 5 years. Since 2010 I have published about 10 publications per year, half of these as either first, last or corresponding author.

Community engagement and participation: I am a member of the Board of Parkinson's Victoria. PVIC an organization that raises awareness and funds for services that improves the quality of life for people living with Parkinson's in Victoria, Australia (http://www.parkinsonsvic.org.au/). Each year I give public lectures to around 2,000 people. I have found it immensely satisfying and fulfilling explaining the complex biology and Parkinson's disease and promising therapeutic approaches to the community.

Involvement with Biotechnology: Based on my knowledge and expertise, I was invited to be scientific consultant for two local biotech companies, Alterity Therapeutics (formerly Prana Biotechnology Ltd.) (2006-ongoing) and Procypria Biotechnology Ltd. (2009-2012), as well as international companies, including Commonwealth Serum Laboratories (2009-2012) and Collaborative Medicinal Development ("CMD" 2010 - ongoing), The primary aim of consulting with industry is to work in partnership to develop new compounds that could potentially slow, if not halt, the progression of neurodegenerative diseases. My skills lie in the pre-clinical testing of new compounds in animal models of disease.

Commercialization: A major highlight of my commercial activities has been the development, in collaboration with Prana Biotechnology, of PBT434 as a lead therapeutic candidate for Parkinson's and Multiple system atrophy (MSA). In collaboration with Prana Biotechnology, I have led the development of PBT434, a novel lead compound for Parkinson's disease. PBT434 has successfully completed Phase 1 clinical evaluation. A second compound (CuATSM) was developed in my laboratory and sold to CMD. In 20919 , CMD successfully ran the patient in a multicentre, randomized, double-blinded, placebo-controlled clinical trial to evaluate the efficacy and safety of CuATSM. Both compounds PBT434 and CuATSM are going into phase 2 testing .

Supervision and mentoring: I have supervised and mentored 14 graduate students, 2 of whom have won Faculty of Medicine, Dentistry and Health Sciences prizes. Five have been awarded NHMRC Early Career Fellowships and have gone onto successful careers in their own rights.

Peer review involvement: I am an academic editor for PLOS One (since 2009), Scientific Reports since (2019) and Journal of Alzheimer's Disease (2015). I am an ad hoc reviewer of about 50 articles per year. I have reviewed grants for the NHMRC, Medical Research Council (New Zealand) Alzheimer's Association (USA),Parkinson's UK and European Science Foundation. Member of ESF College of Expert Reviewers (2020). I have acted as an external reviewer for The Eskitis Institute for Drug Discovery at Griffith University, Queensland Australia. During 2016, I was invited to give a talk and chair 2 panel discussions at the 4th World Parkinson Congress (Portland, USA) and a talk at the 14th Meeting of the Asian-Pacific Society of Neurochemistry (Kuala Lumpur, Malaysia), a keynote address at the Gut-Brain Axis 2018, BioTech Pharma Summit: Conference Series, title the Parkinsonian Gut and in 2019 for the 5th World Parkinson Congress (Kyoto, Japan).

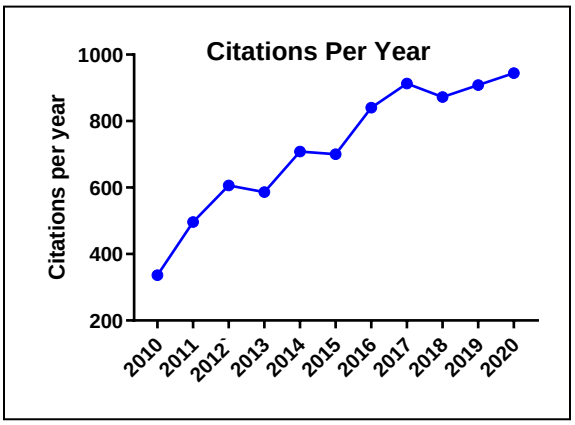
B. Positions and Honors

2011- Ongoing Professor, Head of the Parkinsons disease laboratory, The Florey Institute, Australia
2014- Ongoing A director (Board Member) of Parkinson's Victoria, an organization that raises awareness and funds for services and research that improves the quality of life for people living with Parkinson's in Victoria, Australia. Chair of Board 2015-2019. Head of the Research Committee (2014 – ongoing)

C. Contributions to Science

My contribution to my field of research is listed under the following headings: 1) Contribution to Science; 2) Contribution to Students; 3) Contribution to the Research Community and 4) Contribution to the Community.

1) **Contribution to Science**: I have maintained a consistent publication record and accrued 180 refereed research articles and 10 refereed reviews, these have been cited over 10,000 times (5000 citation since 2015, h-index: 57, google Scholar). My trajectory of quality output has been accelerating. Over the last 5 years I have published 55 Articles (Nature Med, Molecular Psychiatry, Acta Neuropath Communications, J Neuroscience, Neurobiology of Disease, Biomaterials, annals of neurology).



2) **Contribution To Students;** I am Chair of examiners at the Florey. I have been involved in the supervision of 14 graduate students, 2 of which have won faculty prizes, 5 have been awarded the prestigious CJ Martin and Early Career Fellowships.

3) Contribution To The Research Community: Academic editor for Plos One (2009-), Journal of Alzheimer's Disease (2015) and Scientific Reports (2019 -). Ad hoc reviewer for over 50 articles per year. Member, Australian national NHMRC Grant review panel (2009, 2010, 2015, 2016); I review grants for international bodies such as; French Agence Nationale de la Recherche , New Zealand MRC and Neurology foundation, Alzheimer's Association USA and Parkinson's UK (2017- 2018). In 2015 I acted as an external reviewer for The Eskitis Institute for Drug Discovery at Griffith University, Queensland Australia

4) **Contribution To The Community:** I was the former Chair of the Board of Parkinsons Victoria (voluntary). Parkinson's Victoria raises awareness and funds for services and research to improve the quality of life for people living with Parkinson's http://www.parkinsonsvic.org.au I give 6-8 public lectures a year to approximately 2000 members of the public. As part of my involvement in the Board I utilized my scientific knowledge to assist the community. For example: Description of Research: We performed attitudinal research on People living with Parkinsons to find out which requirements of the community are not being met. Result: One shocking statistic was that 50% of people with Parkinsons leave the workforce because of perceived discrimination and lack of support in the workplace. Description of Impact: My leadership at Parkinsons Victoria has seen the organization transforming to meet the needs of people living with Parkinsons today and preparing the Australian community for a doubling of the number of people with PD in the next 15 years.

D. Additional Information: Research Support and/or Scholastic Performance

Grants currently held.

Michael J Fox Foundation: Project Title: Brain-penetrating antisense oligonucleotide to down-regulate alpha-synuclein. Started 2021 for 1 year

Michael J Fox Foundation. Title: Pharmacologic evaluation of PBT434 in a Hemiparkinsonian Nonhuman Primate Model for dose optimization in PD clinical trials. Started 2021 for 1 year

Australian National Health and Medical research council (NHMRC) APP1145686 - Neuropathological basis of the gastrointestinal problems in PD . Started 2018 for 4 years.

NHMRC APP1156744 - Using biomaterials to divert endogenous neural stem cells for brain repair (Novel therapies); Started 2019 for 4 years

Publications/key authorships (most recent to pre-clinical testing):

1 Finkelstein, D. I., Billings, J. L., Adlard, P. A., Ayton, S., et al. Barnham, K. J. and Cherny, R. A. (2017). The novel compound PBT434 prevents iron mediated neurodegeneration and alpha-synuclein toxicity in multiple models of Parkinson's disease. Acta Neuropathol Commun 5(1): 53. This study was a result of 10 year of work of my team and in consultantion with Alterity Therapeutics (formerly Prana Biotechnology). From over 400 compounds designed and screened, PBT434 emerged and has been succesfully tested in Phase 1 clinical trials and a Phase 2 trial for MSA is planned for 2020.

2 Gotsbacher MP, Telfer TJ, Witting PK, Double KL, Finkelstein DI, Codd R (2017) Analogues of desferrioxamine B designed to attenuate iron-mediated neurodegeneration: synthesis, characterisation and activity in the MPTP-mouse model of Parkinson's disease. Metallomics 9:852-864..

3 Lei, P., Ayton, S., Appukuttan, A. T., Moon, S., Duce, J. A., Volitakis, I., Cherny, R., Wood, S. J., Greenough, M., Berger, G., Pantelis, C., McGorry, P., Yung, A., Finkelstein, D. I. & Bush, A. I. (2017) Lithium suppression of tau induces brain iron accumulation and neurodegeneration. Mol Psychiatry, 22(3), 396-406. We investigated how tau deficiency induces Parkinsonism and represents the culmination of our previous studies into the basic science of the basal ganglia. Tau has a role in iron export and identifies the failure of iron export as a possible pathological mechanism in PD. During this study, I supervised and mentored 2 PhD candidates (Lei, Ayton). The start of his work was the highly cited Lei P., Ayton S., Finkelstein D.I et al. “Tau deficiency induces parkinsonism with dementia by impairing APP-mediated iron export”. Nature Medicine (2012) 18: 291-296.

4 Ellett LJ, Hung LW, Munckton R, Sherratt NA, Culvenor J, Grubman A, Furness JB, White AR, Finkelstein DI, Barnham KJ, & Lawson VA (2016) Restoration of intestinal function in an MPTP model of Parkinson's Disease. Scientific Reports 6:30269. This publication explored the role of the enteric nervous system as the source of gastrotintestinal problems observed in preclinical Parkinson’s disease models. It is also shows that the gastrotintestinal problems seen in PD are a trackable target for novel thereapeutics with previously unproven mechanisms of actions. .

5 Fon, D., Zhou, K., Ercole, F., Fehr, F., Marchesan, S., Minter, M. R., Crack, P. J., Finkelstein*, D. I. & Forsythe, J. S. (2014) Nanofibrous scaffolds releasing a small molecule BDNF-mimetic for the re-direction of endogenous neuroblast migration in the brain. Biomaterials, 35(9), 2692-712 *co-senior. We have observed, for the first time, that endogenous Neural Progenitor Cell migration can be diverted from its natural course, through the use of a non-toxic implanted material, polycaprolactone (PCL). This novel strategy lays the foundation for the 2019 NHMRC grant. This study represents a part of the Finkelstein-

Forsythe collaboration, with of a total of 933 citations (Google Scholar) from 21 papers we have published together.

6 Ayton, S., Lei, P., Duce, J. A., Wong, B. X., Sedjahtera, A., Adlard, P. A., Bush, A.I & Finkelstein, D.I. (2013). Ceruloplasmin dysfunction and therapeutic potential for Parkinson disease. Annals of Neurology, 73(4), 554–559. This study defined a role of ceruloplasmin in Parkinson's disease and its therapeutic potential. We found that intravenous injection of ceruloplasmin attenuated neurodegeneration and iron accumulation in a mouse model of PD.