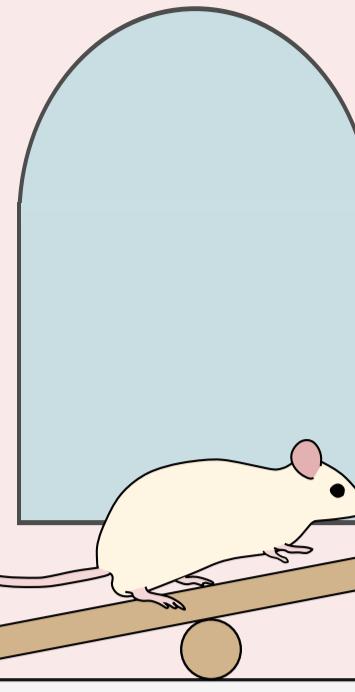


# A proteomics study of life-long exposure to environmental enrichment

- The surrounding environment plays a critical role in shaping our brains, especially in early life.<sup>1-2</sup>
- Growing up in an impoverished environment is a risk factor for developing neuropsychiatric conditions in later life while growing up in a nurturing environment is protective against it.<sup>3-4</sup>
- In rodent research, the housing conditions **standard housing (SH)** & **environmental enrichment (EE)** model an **impoverished** versus a **nurturing** environment, respectively.<sup>5-6</sup>
- Environmental enrichment has many **beneficial effects** & results in widespread alterations to **brain & behaviour**.<sup>5-7</sup>



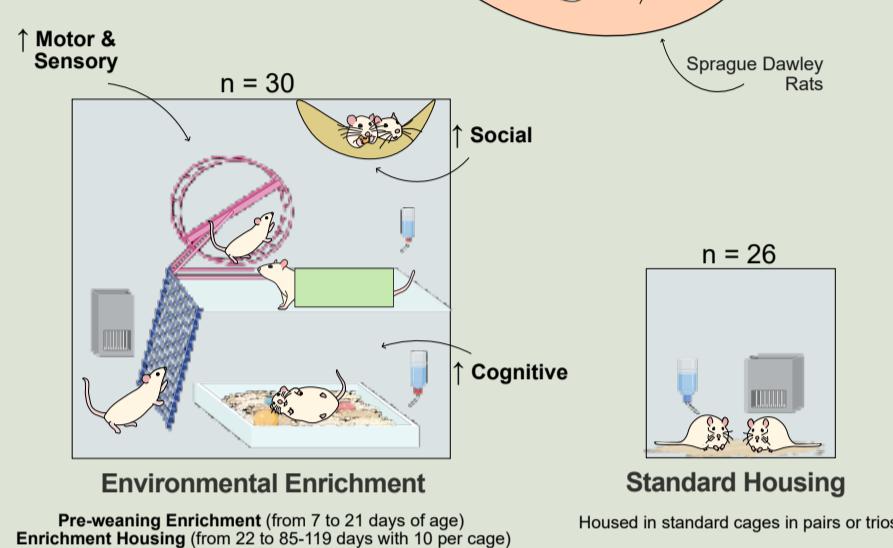
However, the broader underlying mechanisms are still **unclear** as most research has focused on small scale changes e.g. quantifying differences in a small handful of proteins in western blotting.

- Recent advancements in **mass spectrometry-based proteomics** allow the simultaneous characterisation of thousands of proteins (**proteome**) to generate robust mechanistic insights.<sup>9-10</sup>

**Aim:** Characterise the changes in the proteome following life-long exposure to environmental enrichment.

## Methods

### Housing Conditions



Cohort	Litter	Males	SH	EE	Total	Females	SH	EE	Housing	Grand Total
3a	4	4	8	1	3	4	5	7	SH	12
3b	2	2	4	1	3	1	3	3	EE	9
S328	0	0	0	0	1	1	0	1	EE	1
3b	4	4	4	4	4	0	4	4	EE	8
S329	2	2	4	2	2	4	4	4	EE	8
S329	2	2	2	2	2	2	2	2	EE	8
S329	2	2	2	2	2	2	2	2	EE	8
4	2	2	2	2	2	2	13	15	EE	28
A420	1	1	2	2	2	4	3	3	EE	6
S422	2	2	4	2	2	4	4	4	EE	8
S423	2	2	3	2	2	4	3	4	EE	7
S426	1	2	3	2	2	4	3	4	EE	7
<b>Grand Total</b>		<b>13</b>	<b>15</b>	<b>28</b>	<b>13</b>	<b>15</b>	<b>28</b>	<b>26</b>	<b>30</b>	<b>56</b>

Cohort	Age (Cohort)	Males	SH	EE	Average	Females	SH	EE	Average	Cohort	Average
3a	113	112	112	115	105	107	110	110	111	111	111
3b	100	99	101	101	99	99	100	100	99	100	99
4	85	85	85	85	85	88	88	88	88	88	88
<b>Brain samples collected in adulthood (85-119 days of age)</b>											

Housed in standard cages in pairs or trios

n = 26

Standard Housing

Housed in standard cages in pairs or trios

8 Litters

Males & Females

8 Litters

8 Litters