

## Monitoring Physical Healing and Psychological Wellbeing in Paediatric Burns by Proteomic Analysis of Saliva.

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### Why is this research needed?

- 991 Paediatric inpatients were treated for burn injury in Australia and New Zealand in 2016-17 [1]. Thousands more are treated as outpatients or by general practitioners.
- Currently available clinical assessment tools for burns are not optimal for use in children and therefore doctors have to rely on personal assessment of burn wounds to determine severity and healing. **This introduces subjectivity.**
- Psychological assessment in children relies on the evaluations of nurses and parents which may not accurately reflect the child's true feelings. **This introduces subjectivity.**

[1] BRANZ. 2018. Burns Registry of Australia and New Zealand Annual Report 2016-2017. <https://www.branz.org/publications-and-reports>

### Research Plan



#### Recruitment

- Patient (n=30)
- Drool Sample
  - Buccal Swab
- Control (n=30)
- Drool Sample
  - Buccal Swab

Table 1: Outcome Measures

Instrument	Measures	Patient	Control
<b>Demographics</b>	Age, Gender, Ethnicity and Postcode	Y	Y
<b>Previous Trauma</b>	Presence or absence of past trauma	Y	Y
<b>SDQ</b>	Other Behaviours (numerical value)	Y	Y
<b>CTSQ</b>	Stress (numerical) – Child Reported	Y	N
<b>PEDS-ES</b>	Stress (numerical) – Parent Reported	Y	N
<b>Pain</b>	0-10 score	Y	N
<b>Anxiety</b>	0-10 score	Y	N
<b>Heart Rate</b>	Average	Y	N
	Peak	Y	N
<b>Health Data</b>	TBSA, Burn Depth, Healing Time, etc.	Y	N

### Recruitment Data

Table 2: Recruitment Status

Patient (n = 12)		Mean	SD
Age (Years)		5.75	3.8
		<b>N</b>	<b>%</b>
Gender	Male	5	41.67
	Female	7	58.33
Ethnicity	Asian	2	16.67
	Caucasian	8	66.67
	Pacific Islander	1	8.33
	Torres Strait Islander	1	8.33
Stress*	High Stress	3	25
	Low Stress	8	66.67
Control (n = 31)		Mean	SD
Age (Years)		5.01	2.69
		<b>N</b>	<b>%</b>
Gender	Male	13	41.94
	Female	18	58.06
Ethnicity	Aboriginal	2	6.45
	Caucasian	28	90.32
	Pacific Islander	1	3.23

\* One missing value for child's stress

### 2 Sample Processing

Protein Fractionation

- OFFGEL – Isoelectric Point
- SDS-PAGE – Protein Size

Tryptic Digestion

- Filter Aided Sample Preparation
- In-gel Digestion

### 4 Statistical Analysis

- Univariate analysis
- Multivariate analysis
- Gene Ontology analysis

### 3 Mass Spectrometry

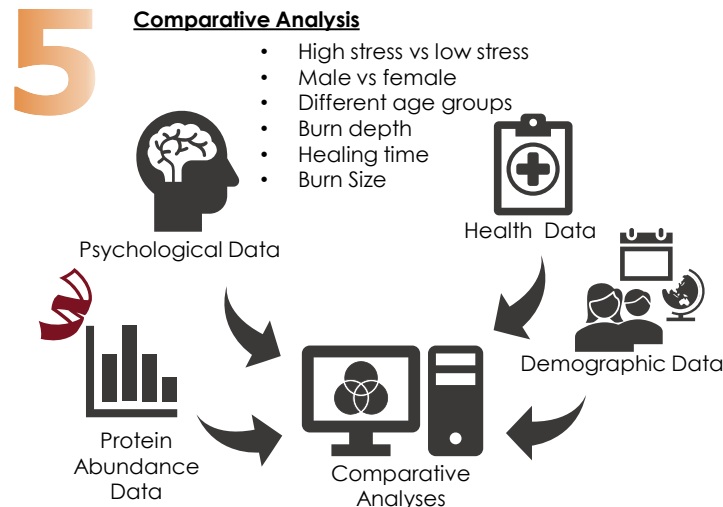
Protein Identification

- Detect Proteins
- Create a protein library

Protein Quantification

- Protein Abundance

- Compare protein profiles
- Control vs Patient
- Identify enriched biological processes
- Control vs Patient



### Expected Outcomes

1. Define salivary protein profiles of healthy children and children with burns.
2. Identify biomarkers associated with different burn characteristics and psychological states.
3. Improve the current understanding of underlying biology associated with burns and burn-related psychological stress.

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