Felxi-TEER

Release 1.0

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CHAPTER

ONE

TEER THEORY

`![](https://github.com/mdanderson03/Felxi-TEER/blob/11124297eae28fc72f78af3b5448df1af65e0caa/passive%20diffusion.png)`

The typical use of TEER is with transwells. In these, monolayers of cells are formed and ions can passively diffuse through the gaps between cells.

`![](https://github.com/mdanderson03/Felxi-TEER/blob/11124297eae28fc72f78af3b5448df1af65e0caa/passive%20diffusion2.png)`

Lets start forming a model on this. So if a gap has a tight junction formed, it blocks the ion from going through it. If it lacks a tight junction, then the ion can go on through. Lets translate that into a simple electrical circuit model.

`![](https://github.com/mdanderson03/Felxi-TEER/blob/11124297eae28fc72f78af3b5448df1af65e0caa/passive%20diffusion3.png)`

So we replace tight junctions with open circuits and given gaps restrict the rate that charged particles can pass through the monolayer, lets say they are resistors. So **tight junctions = open circuit** and **gaps = resistors**

Ohm's Law

$$V = I*R$$ (1) **Parallel Resistance Equivalency**

$$R_{eq} = dfrac{1}{(sum{dfrac{1}{R_g}})}$$(2) $$R_{1} approx R_{2} approx R_{3} approx … approx R_{G}$$(3) Sub [3] into [2] $$R_{eq} = dfrac{1}{(dfrac{1}{R_G}*N_{G})}=dfrac{R_{G}}{N_{G}}$$(4) $$N_{CJ}=N_{TJ}+N_{G} to N_{G} = N_{CJ}-N_{TJ}$$(5) Sub (3) into (4) and taylor expand $$R_{eq}=dfrac{R_{G}}{N_{CJ}*(1-dfrac{ N_{TJ}} {N_{CJ}})} to dfrac{R_{eq}*N_{CJ}}{R_{G}} = dfrac{1}{(1-dfrac{N_{TJ}}{N_{CJ}})} approx 1+ dfrac{N_{TJ}}{N_{CJ}}$$(6) Thus $$R_{eq} propto N_{TJ}$$(7)

r"“" .. math:: w_k^* = min_{w_k} ell_k(w_k) + lambdaleft(alpha||w_k||_1

- frac{1}{2}(1-alpha) ||w_k||^2right)

“”“

CHAPTER

TWO

INDICES AND TABLES

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