Electroceuticals Industry Landscape

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Electroceuticals

- Medical Devices
- Read and modify electrical signals passing along nerves
- Offer treatment for a wide variety of health conditions
Pharma Market is Huge!!

Chronic pain treatment market is expected to reach $105.9 billion by 2024
PRNewswire, Feb 2019

Global Rheumatoid Arthritis Drugs Market $50.5 Billion by 2025
iHealthCareAnalyst, Nov 2019

Global Allergy Drugs Market $4.8 Billion by 2023
MarketResearchFuture, Mar 2020
Nevro: Managing Chronic Back Pain

- Back pain is No.1 cause of disability around the world.
- Costs U.S. economy > $100 billion
- Electrical pulses to spinal cord achieve a significant reduction in severe back and leg pain
- Alternative to Painkillers (Opioids)

www.nevro.com
Setpoint Medical: Chronic Inflammation

- Pacemaker for Brain
- Chronic Inflammation Management
- Unlock Restorative Power of Inflammatory reflex
- Intersecting & manipulating signaling from the Brain through Vagus nerve

[www.setpointmedical.com](http://www.setpointmedical.com)
Explosive Growth of Electroceuticals

Source: BBC Publishing, 2019

Source: Grandviewresearch, 2019

30-40B$ Expected Market in FY24-25
Double digits CAGR
Several minimally invasive products popping up
Market Breakdown: Segments (2010)

- Traditional Pharma
- Electroceuticals
- Both

Diagram showing market caps in millions for various companies in the segments.
More Big-Pharma companies investing in Electroceuticals
Companies specializing in Electroceuticals springing up across the world
Electroceuticals Ecosystem

- All six parts of ecosystem interdependent
- More complex systems require advances in all areas
Challenges

- Complexity
  - 86 Billion neurons
  - 150 Trillion Synapses
Challenges

- Complexity
- Safety
  - Infection (1.5~2%)
  - Interference
  - Reliability
Challenges

- Complexity
- Safety
- Regulations
  - A central registry
  - Ethics

NIH ref: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6397644/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6397644/)
Electroceuticals Industry SWOT Analysis

**Strengths**
- Medical breakthroughs & Semiconductor advancements: - Mapping Neural response, Miniaturization, Low power connectivity
- Strong VC, Funding interests in Health care

**Opportunities**
- Ready to take on >100B pharmaceutical industry
- Patient compliance, improved quality of care
- Big Data/ML: - Improved response, patient care

**Weakness**
- Long term efficacy, Patient acceptance
- Surgical intervention creating barriers
- Diverse ecosystem players with conflicting business models

**Threats**
- Regulatory Compliance
- Security, Privacy concerns
- Business model scalability
Pre 2010: Challenge is Selectivity of Stimulus

“The best way to predict the future is to study the past”

- Electroceuticals approved for seizures, depression, Obesity, pain management
- Problem is selectivity:
  - Side effects from non-selective stimulation, limits treatment option to only ⅓ of patients
- Future: Miniaturization enables Closed-Loop Control
  - Controlled stimulation by recording whole organ function
- Big data/ML to continuously improve selectivity
  - Huge advantage over pharmaceutical options with little side effects.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6586833
Future Landscape Predictions

- Electroceuticals will be mainstay treatment for Chronic disease management taking on pharma industry due to recent technology breakthroughs.
- Next big wave of advances/products will come post changes in regulation and public policy
- Players with strengths on multiple ecosystem components & established business scale through partnerships will win.
  - GSK/Galvani, Verily/Google is primed to lead this industry
  - Pharmaceutical industry majors (eg: Pfizer, J&J) will acquire/partner with electroceuticals startups
Thank you