NeuroBiology Foundation

Finding Cures for Schizophrenia and Bipolar Disorder
Introduction

- The NeuroBiology Foundation is a preeminent 501c3 non-profit organization funding clinical and biomedical research to identify new treatments for schizophrenia and bipolar disorder to prevent the loss of potential among our vulnerable populations.

- In addition, the Foundation is committed to reducing the stigma associated with these illnesses and to provide education in treatment options.
Schizophrenia & Bipolar Disorder are Common but Devastating Illnesses

- 1 in 4 families are affected by serious mental illness
- Schizophrenia affects 2.4 million American adults (1.1%)
- Bipolar disorder affects 5.7 million American adults (2.6%)
- Age of onset is late teens to mid-20s
- Effectiveness of existing medications is low
- 51% of people with schizophrenia and 40% of people with bipolar disorder are untreated.
- 40% of men and women with schizophrenia attempt suicide multiple times and 30% of people with untreated bipolar disorder are successful.
### U.S. Burden of Diseases

**Changes between 1990-2010**

<table>
<thead>
<tr>
<th>Disease or Injury</th>
<th>Mean rank (95% UI)</th>
<th>Median change, % (95% UI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ischemic heart disease</td>
<td>1.0 (1-1)</td>
<td>-19 (-25 to -37)</td>
</tr>
<tr>
<td>2. Chronic obstructive pulmonary disease</td>
<td>2.5 (2-4)</td>
<td>34 (19 to 52)</td>
</tr>
<tr>
<td>3. Stroke</td>
<td>7.3 (5-10)</td>
<td>9 (8 to 18)</td>
</tr>
<tr>
<td>4. Lower extremity</td>
<td>5.8 (4-10)</td>
<td>43 (9 to 82)</td>
</tr>
<tr>
<td>5. Other musculoskeletal disorders</td>
<td>5.5 (3-8)</td>
<td>34 (24 to 51)</td>
</tr>
<tr>
<td>6. Stroke</td>
<td>7.3 (5-10)</td>
<td>9 (8 to 18)</td>
</tr>
<tr>
<td>7. Diabetes</td>
<td>7.4 (4-10)</td>
<td>58 (43 to 71)</td>
</tr>
<tr>
<td>8. Diabetes</td>
<td>21.9 (18-26)</td>
<td>36 (12 to 70)</td>
</tr>
<tr>
<td>9. Lower extremity</td>
<td>22.0 (14-28)</td>
<td>24 (15 to 38)</td>
</tr>
<tr>
<td>10. Drug use disorders</td>
<td>26.7 (15-23)</td>
<td>38 (10 to 50)</td>
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<tr>
<td>11. HIV/AIDS</td>
<td>10.5 (6-14)</td>
<td>38 (10 to 50)</td>
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<tr>
<td>12. Anxiety d/os</td>
<td>10.4 (6-13)</td>
<td>38 (10 to 50)</td>
</tr>
<tr>
<td>13. Anxiety d/os</td>
<td>10.4 (6-13)</td>
<td>38 (10 to 50)</td>
</tr>
<tr>
<td>14. Self harm</td>
<td>10.4 (6-13)</td>
<td>38 (10 to 50)</td>
</tr>
<tr>
<td>15. Lower extremity</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>16. Chronic kidney disease</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>17. Cancer</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>18. Alzheimer disease</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>19. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>20. Lower extremity</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>21. Breast cancer</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>22. Alcoholic disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>23. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>24. Asthma</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>25. Osteoarthritis</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>26. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>27. Schizophrenia</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>28. Congenital anomalies</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>29. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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<tr>
<td>30. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>31. Other musculoskeletal disorders</td>
<td>22.7 (14-34)</td>
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<td>32. Schizophrenia</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>33. HIV/AIDS</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
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</tbody>
</table>
Organization

Founder: Jeremy D. Ollerenshaw, Ph.D
- 30 years professional experience in health care
- 60 published scientific research articles
- Assistant professor of biotechnology
- Medical device developer
- Experience in clinical trials and with the FDA

Board of Directors:
- Jeremy D. Ollerenshaw, Ph.D.
- Kirby S. Black, Ph.D.
- Andrew Fleshner, M.B.A.
- Susan Yarbrough
- Michelle Castillo
- Robert Derricotte
- Ken Sorensen, Ph.D.
Finding Cures for Schizophrenia and Bipolar Disorder

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Yale University School of Medicine
Stalled Research

Lack of advancement in academic & industry research has compounding effects

- Research
- Clinicians
- Patients
- Economics
Lack of a Focused Research Path

- Compromised research funding, complex illnesses
- Researchers working in isolation
  - lack of clear direction, uncoordinated efforts
  - poorly understood targets, lack of innovation
- Lack of translational medicine
- Current treatment options are sub-optimal
  - few therapeutic options

Specific therapeutics with fewer side-effects needed
Consequences

- Detection/diagnosis in young people is rare
- Poor efficacy & tolerability of drugs reduce compliance
- Illnesses are not managed allowed to progress
- Stress/social stigma is compounded increases helplessness and psychosis
- Frequently, individuals needing care are ultimately found in jails and as homeless on city streets

Early detection with treatment and support needed
Economic Consequences

- A disproportionate number of the seriously mentally ill are incarcerated (300,000) or homeless (200,000) without appropriate care.
- Economic cost of mental illness in the USA was $300 billion.
What can we do: Research

• Provide access to:
  • Drug and clinical trial databases
  • Subject matter experts
  • Validated therapeutic targets and biomarkers

• Provide research grant funding for:
  • Scientific programs
  • Translational programs
  • Physician education
  • New and advanced clinical trials of new therapies
What can we do: Individual

Through patient education:

• Provide better therapeutic options
• Increase therapeutic compliance rates and provide management the illness to prevent progression
• Managing the effects of stigma
• Facilitate a productive role in the workforce
• Reduce the number of suicides
What can we do: Economics

Through research and development of better therapeutics:

- Improve treatment of those suffering with schizophrenia and bipolar disorder
- Maintain a healthy workforce
- Reduce the economic impact of severe mental illness worldwide
- Reduce the number of people with severe mental illness that are homeless or in our prisons and jails
Q: How will we be Successful?
A: Focused clinical and scientific research
A: Collaboration

**Discovery**
Basic Research
Collaboration

**Translational Research**
-targets and biomarkers

**Clinical Studies**
-schizophrenia & bipolar disorder

Finding Cures for Schizophrenia and Bipolar Disorder
Collaborative

• The NeuroBiology Foundation is independent but has the ability to partner with:
  • academia
  • other non-profits
  • industry

• Will leverage clinical and scientific expertise:
  • scientific advisory board
  • partner network

• Will work closely with its researchers and institutions to ensure greatest benefit ultimately to those developing these illnesses.
Differentiated and Focused

The NeuroBiology Foundation is the only 501c3 organization awarding long-term translational and clinical research grants to meet the unmet needs of individuals with schizophrenia and bipolar disorder and prevent deterioration in quality of life.
Goals of the Neurobiology Foundation

1. Reduce the presence of schizophrenia and bipolar disorder among families in the United States by half (effectively curing about 4 million Americans)

2. Decrease the homeless and the prison population by 50% (essentially giving back hopes and dreams to around 250,000 people)

3. Significantly contribute to reducing the $300 billion economic burden that mental illness represents in the United States.