Mission

To increase knowledge of the causes of Alzheimer’s and Parkinson’s Disease by generating a mechanism-based taxonomy; to validate the taxonomy in a prospective clinical study that demonstrates its suitability for identifying patient subgroups (based on discrete disease mechanisms); to support future drug development and lay the foundation for improved identification and treatment of patient subgroups currently classified as having AD or PD.
Treating Patients According to the Disease Mechanism – a revolutionary concept!
Human Beings are Multi-Dimensional
Genes, Brain Cells, Neuro-Imaging, Brain Connectivity ...
Mechanisms, measurable features and stratification ....
Mechanism linking Insulin-Signalling and Amyloid Clearance

Mining of co-morbidity information results in the second mechanism-hypothesis generated in AETIONOMY: a possible link between insulin receptor pathway, mTOR-induced autophagy and APP peptide clearance

Supportive evidence from SNPs that are shared by AD and T2DM
### Mapping Pharma R&D Investment to Alzheimer Mechanisms

<table>
<thead>
<tr>
<th>Target Type</th>
<th>Computable Mechanism</th>
<th>Cartoon Representation</th>
<th>Compounds</th>
<th>Cost in TCU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amyloid Cascade</td>
<td></td>
<td></td>
<td>RG7129, LY2686721, BL1181181, AN-1792, Bapineuzumab, PF-04360365, Vanulide, Crifidicar, Semagacestat, Avagacestat</td>
<td>~8 TCU</td>
</tr>
<tr>
<td>Tauopathy</td>
<td></td>
<td></td>
<td>Rember TM, Epophiolone D, AN-1792, Bapineuzumab, PF-04360365, Vanulide, Crifidicar, Tideglusib</td>
<td>~2 TCU</td>
</tr>
<tr>
<td>Neuroinflammation</td>
<td></td>
<td></td>
<td>Ibuprofen, Lornoxicam, Naproxen, Celecoxib, Rofecoxib, Rosiglitazone, Rofecoxib</td>
<td>~10 TCU</td>
</tr>
</tbody>
</table>

Pharmaceutical Industry targets only 4 out of 121 Mechanisms underlying Alzheimer’s Disease.

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![Logos](image)
Need for Collaboration across Disciplines

• Computer Scientists to collaborate with Clinicians

• Molecular Biologists to collaborate with Imaging Specialists

• Experts in Artificial Intelligence to collaborate with Experts in Cognition Testing

• All listening to patients advocates

• All collaborating with Legal and Ethical Experts
The Virtual Dementia Cohort

- Simulated Dementia Patients
- No Patient Data Privacy compromised
- Freedom of experimentation
- Approximation to reality
- No problem with statistical power
AETIONOMY Partners