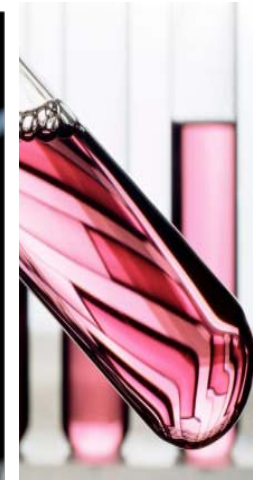
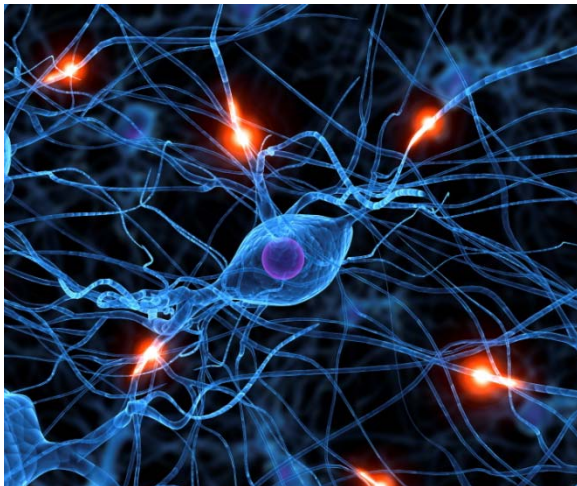


Working with AstraZeneca in the CNS Field

OneNucleus Life Science Leadership Series
Cambridge January 26, 2012

Timothy Herpin, Ph.D.
Vice-President, Strategic Partnering and Business
Development, CNS & Pain



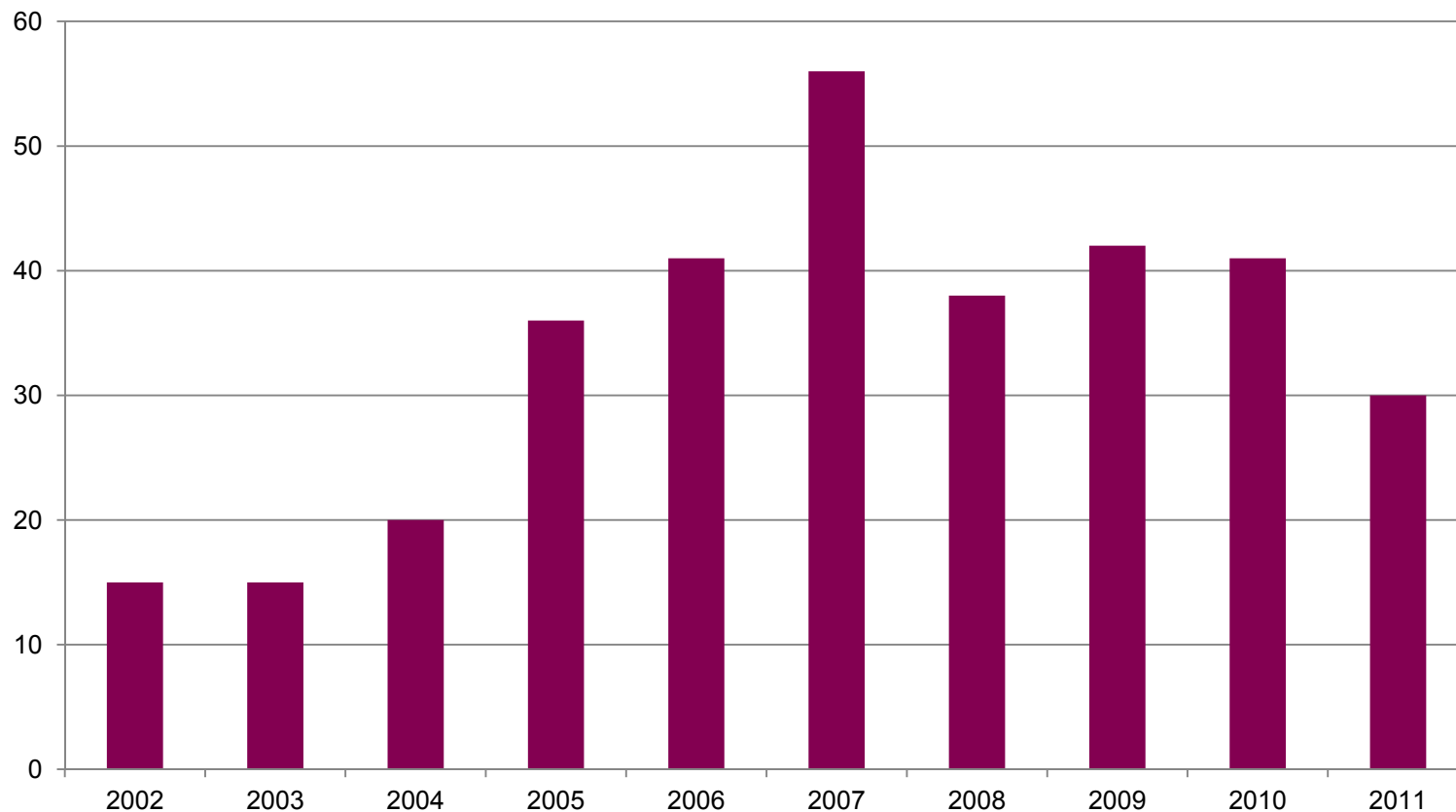
AGENDA

- 1** Recent Trends in CNS Dealmaking
- 2** AstraZeneca CNS & Pain: Who we are and What we are looking for
- 3** Recent Examples of Partnerships at AstraZeneca



CNS Deals In The Last Decade

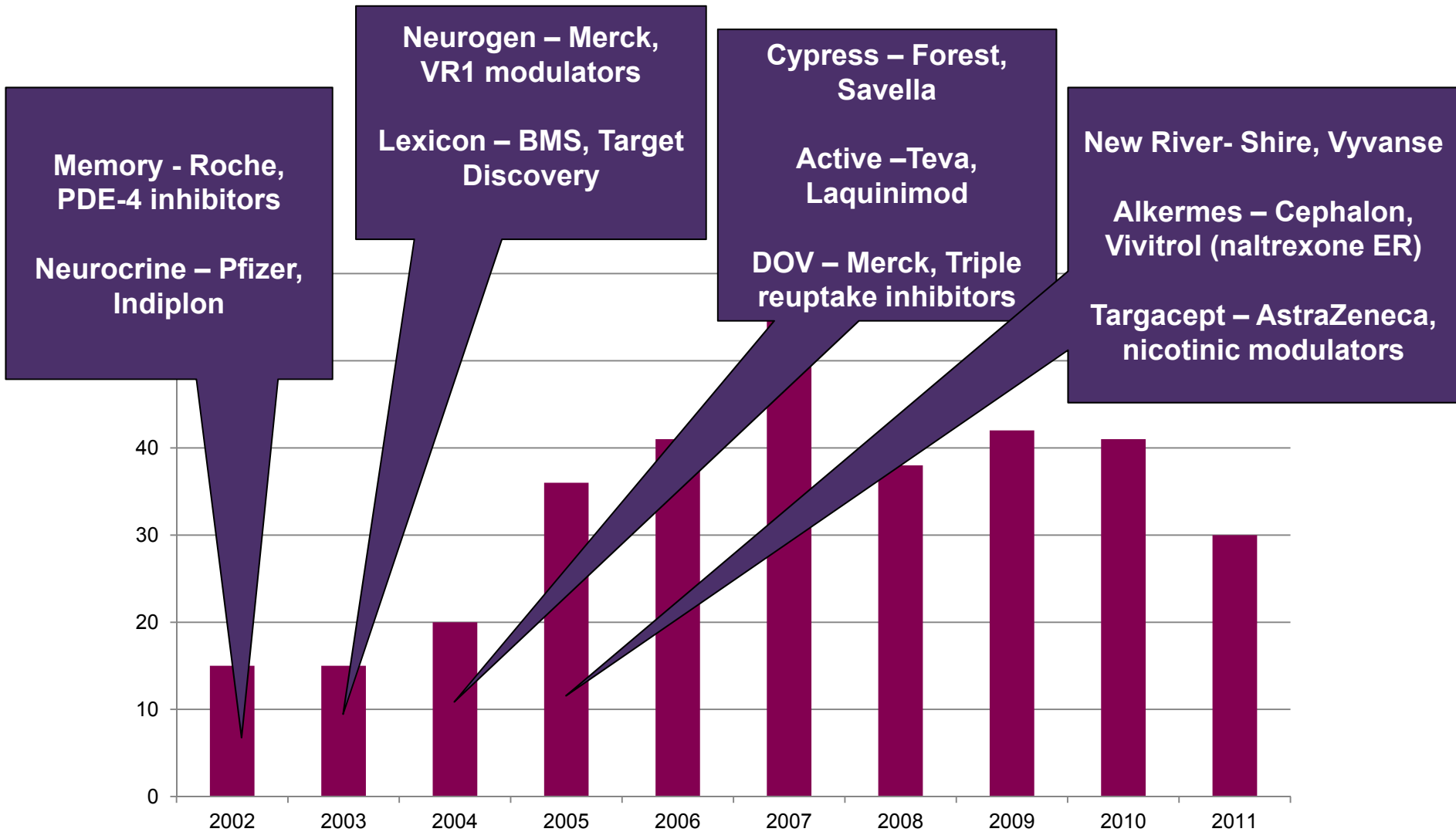
Number of Exclusive Licensing Deals for CNS assets at all stages



Source: Recap database search



CNS Deals In The Last Decade

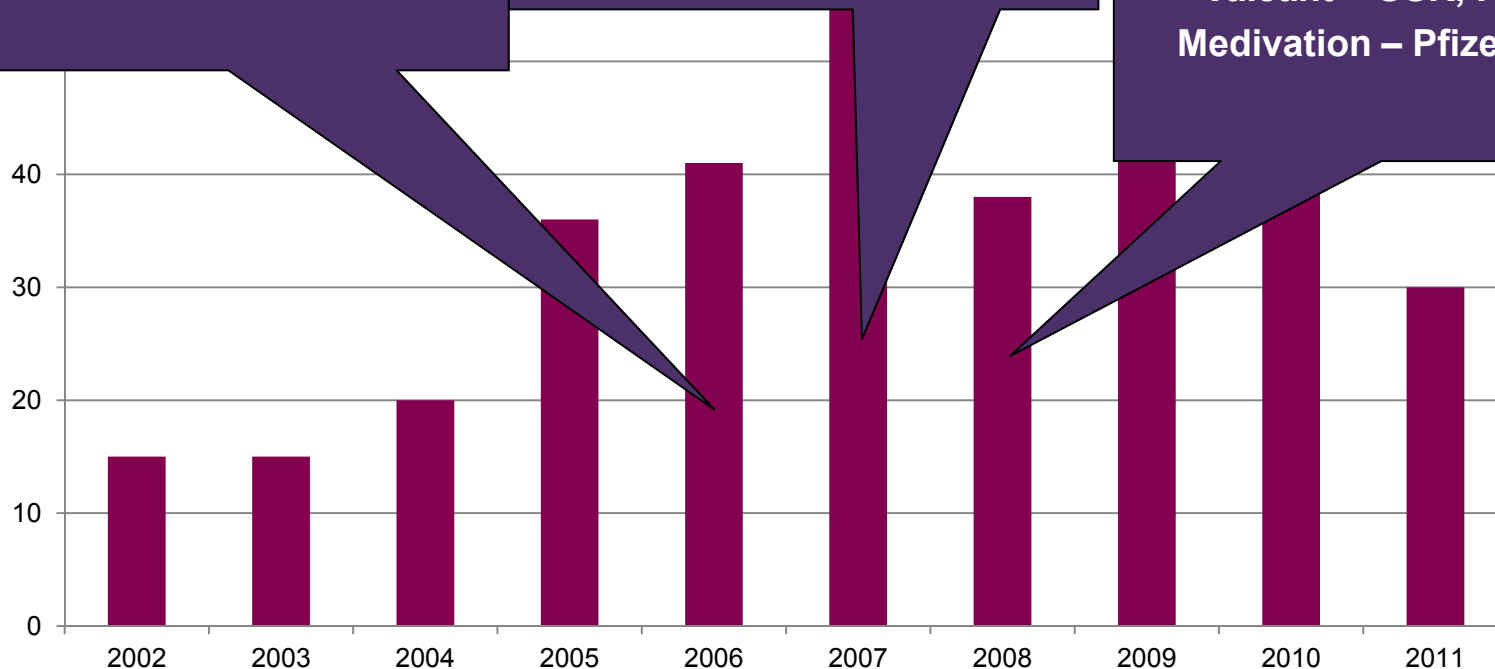


CNS Deals In The Last Decade

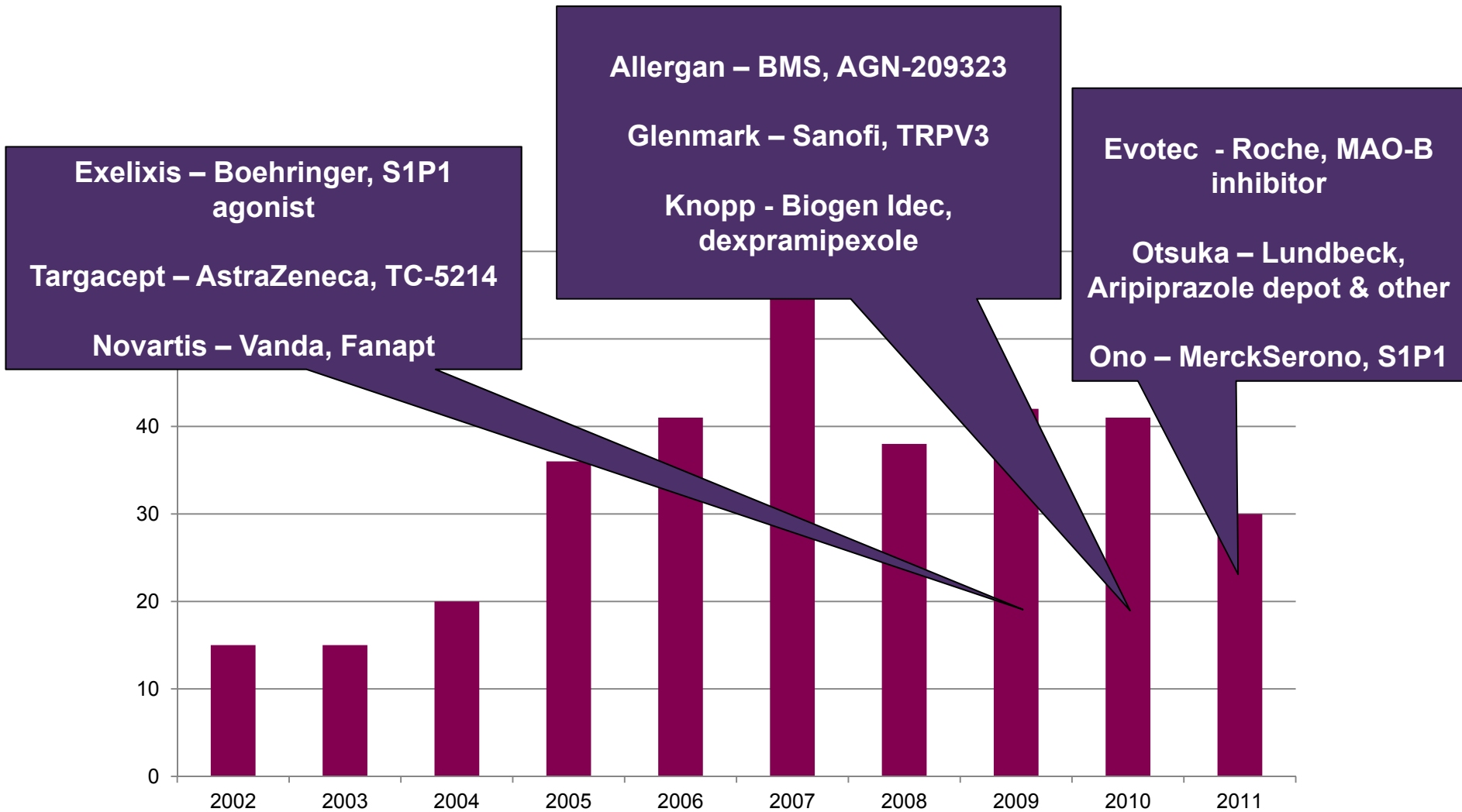
Servier – Novartis, Agomelatine
Neuromed - Merck, N-type Ca
channel
POZEN – AstraZeneca, Vimovo
Transition – Elan, AZD-103

Fabre Kramer – GSK, Gepirone
XenoPort – GSK, Horizant
Lundbeck –Takeda,
bisarylsulphanylaminines
Glenmark – Lilly, TRPV1 antag.

CoMentis – Astellas, BACE
Myriad – Lundbeck, Flurizan
Amgen – Janssen, Fulranumab
Actelion-GSK, Almorexant
Valeant – GSK, Retigabine
Medivation – Pfizer, Dimebon



CNS Deals In The Last Decade



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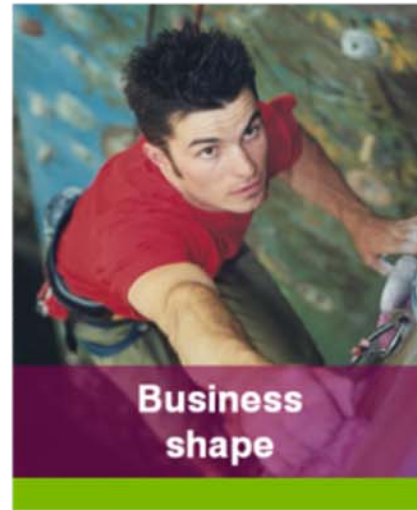
“Externalization is not a short-term stopgap to backfill the pipeline. It represents an important change in mindset. We are making a long-term commitment to step up our access to the world of scientific innovation that resides outside AstraZeneca”

**David Brennan
CEO AstraZeneca**



Our Strategy: Focused, innovation-driven, integrated, global biopharmaceutical business

Making the most meaningful difference to patient health through great medicine

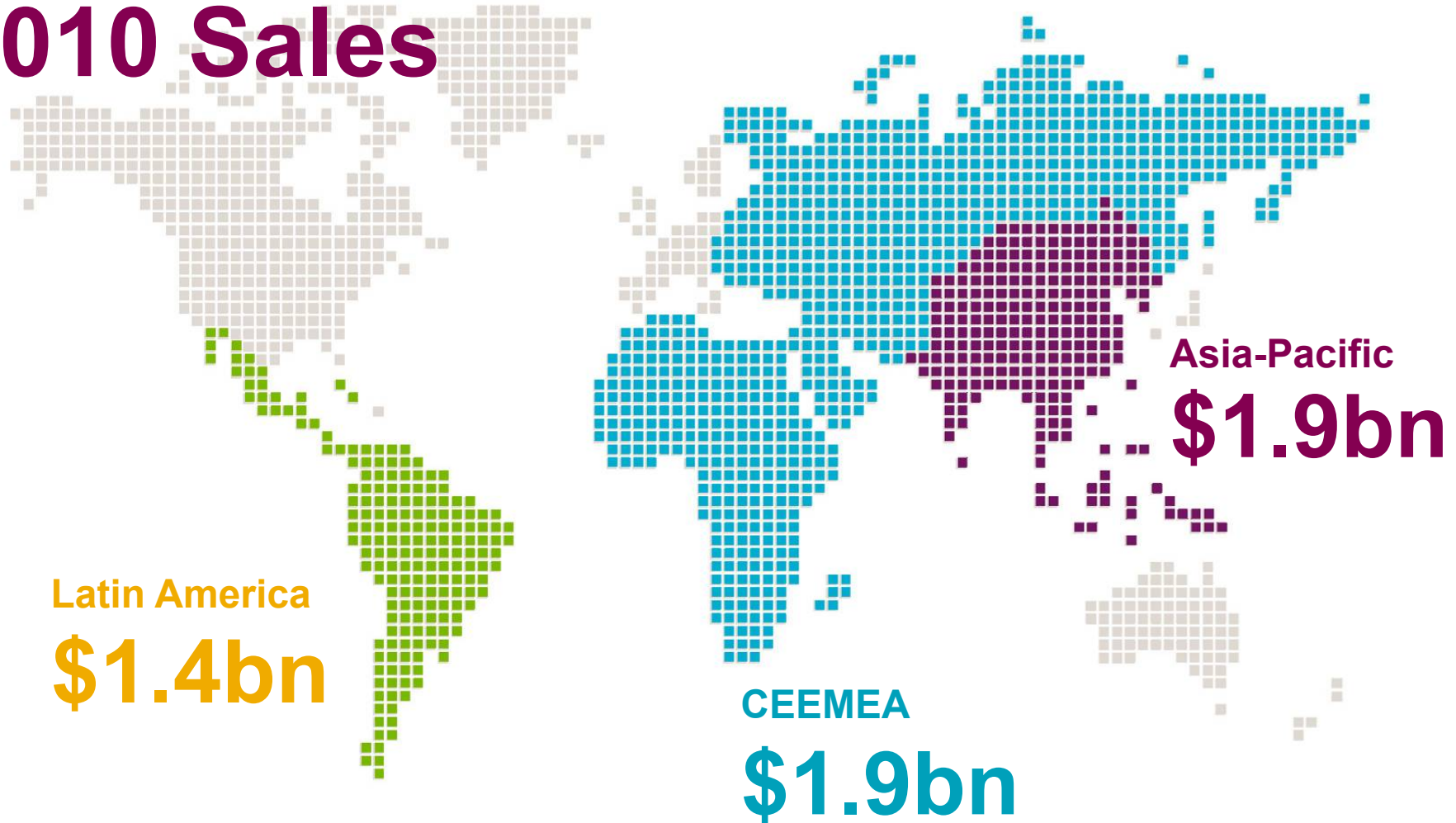


Health Connects Us All



Global: strong footprint in emerging markets

2010 Sales



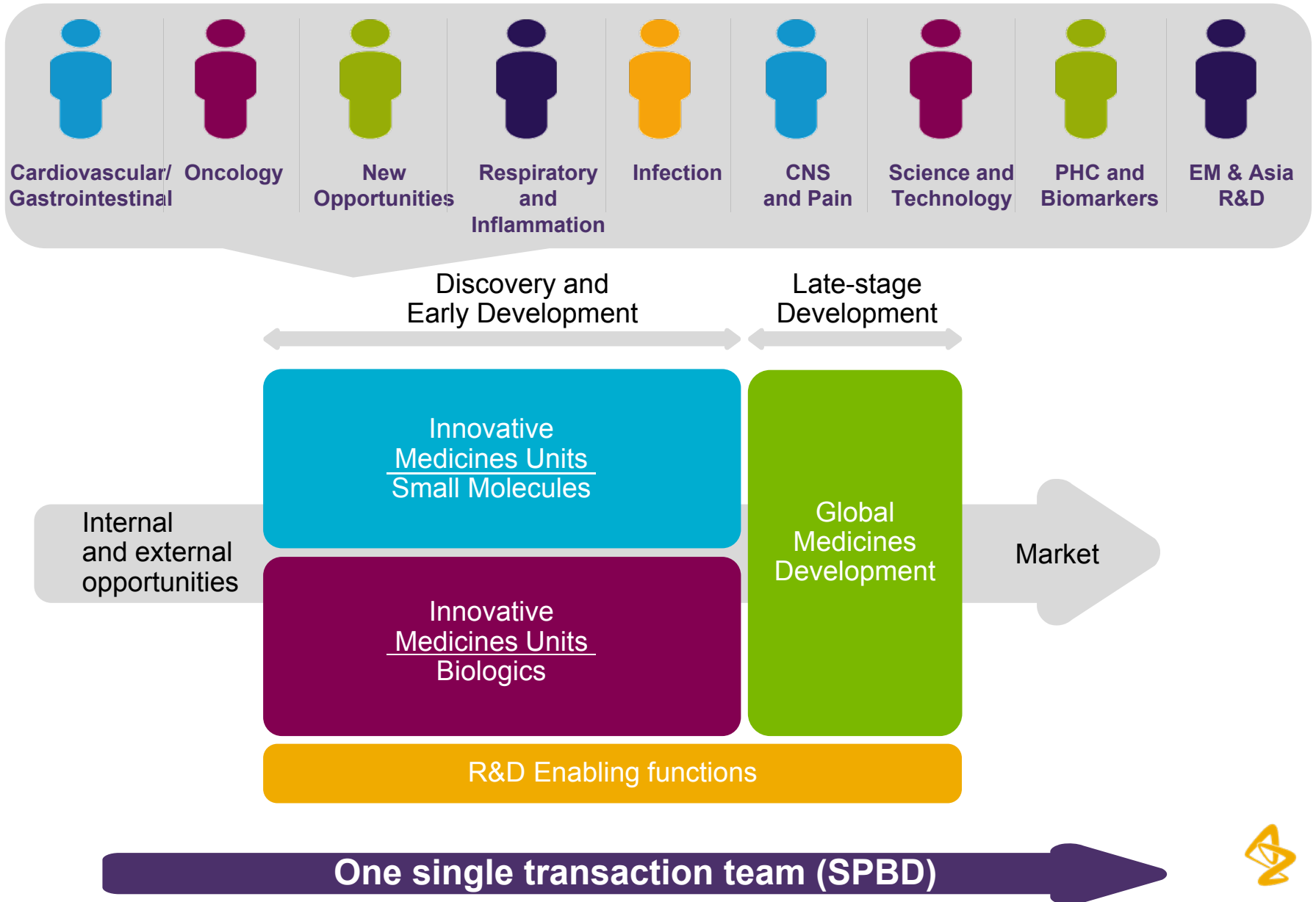
Latin America
\$1.4bn

CEEMEA
\$1.9bn

Asia-Pacific
\$1.9bn



Building direct early access to our R&D



CNS&Pain iMed

**Transform the treatment of
CNS disorders and chronic pain**

**Deliver novel, effective
and targeted treatments
that make a meaningful
difference in patients'
lives**



Global CNS&Pain/Neuroscience teams

CNS&Pain iMed

Christer Köhler
VP, CNSP iMed

Neurology/Pain

Alzheimer's disease

Cognition

Pain



Södertälje

Chronic Pain

Neuropathic pain

Nociceptive pain



Montréal

Biologics

Neuroscience

Centre of
Excellence



Cambridge

450+ scientists in small and large molecule discovery and development

Psychiatry development in Wilmington

Late stage development of SM and LM in Wilmington and Gaithersburg



Significant Unmet Need



25 million people worldwide suffer from **Alzheimer's disease**¹

**Cerebral amyloidosis
Tauopathies
Neuroinflammation**

20% of adults suffer from **chronic pain** at some point in their lives²⁻⁴

Ion channels

Major depression affects 42 million people in five major European countries, Japan & US⁵

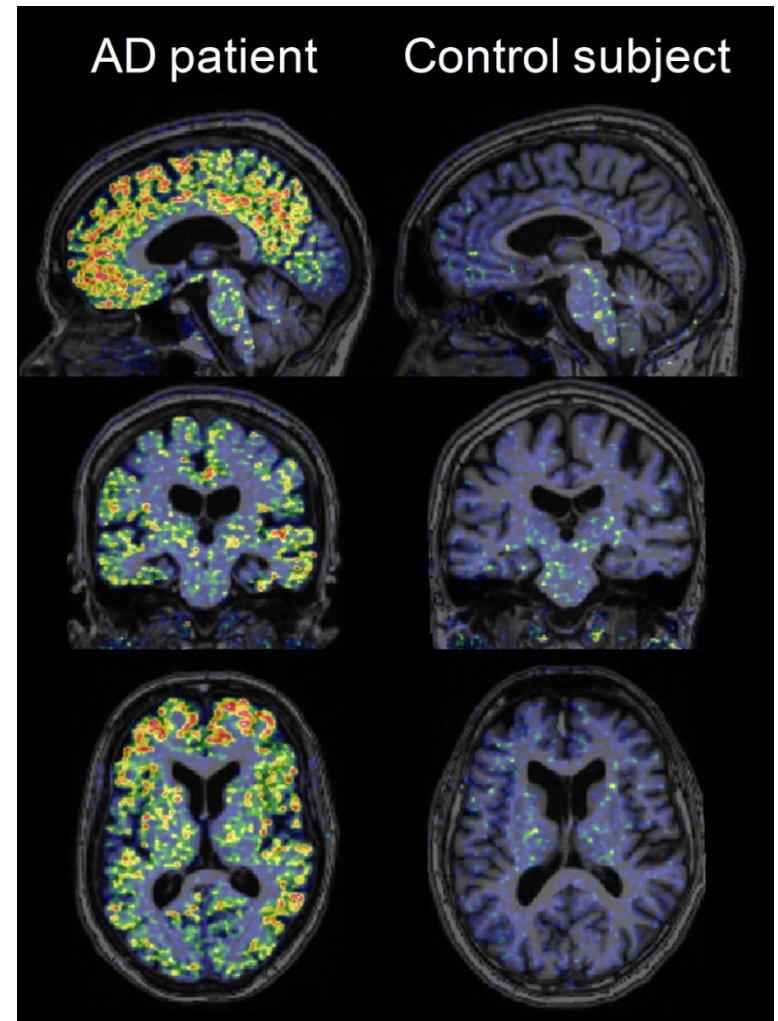
Glutamatergic mechanisms

1. Brookmeyer et al. *Alzheimer's and Dementia*. 2007;3;186-191; 2. EFIC. EFIC's declaration on pain as a major health problem, a disease in its own right. <http://www.efic.org/pain-efic-declaration.php>. Accessed 4 May 2010; 3. Breivik H, et al. *Eur J Pain* 2006;10:287-333; 4. National Center for Health Statistics. *Health, United States, 2006*; 5. Decision Resources. Major Depressive Disorder report 2009



Areas of Interest: Alzheimer's and Parkinson's Disease

- Disease modifying treatments based on novel approaches
- Novel biologic approaches
- Cognitive enhancers with clinically meaningful effects
- Early detection & biomarkers



Areas of Interest: Analgesia

- Novel therapeutics for chronic pain (both neuropathic and nociceptive)
- Novel biologic approaches
- Tools to aid in clinical study design and understanding the disease



Areas of Interest: Psychiatry

- Late stage opportunities at Phase IIb and beyond
- All psychiatry disease areas including, but not limited to, schizophrenia, bipolar disorders and depression



The 5 R's: The criteria for R&D investment

Right target engagement

- Link between target / disease
- Predictive biomarkers

Right tissue exposure

- Bioavailability and tissue exposure
- Human PK/PD prediction

Right safety

- Differentiating safety
- Reactive metabolites

Right patients

- Scientific evidence in lead indication
- Stratification of patient population

Right commercial

- Differentiated value proposition
- Embedded payer perspective



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Global Network of Collaborations and Alliances



Innovative Medicines Initiative



Alliance to develop tau-based therapeutics

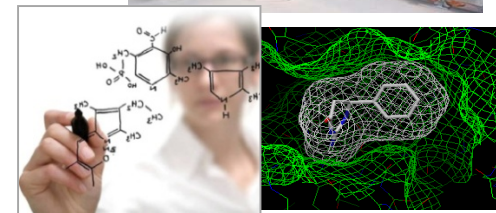
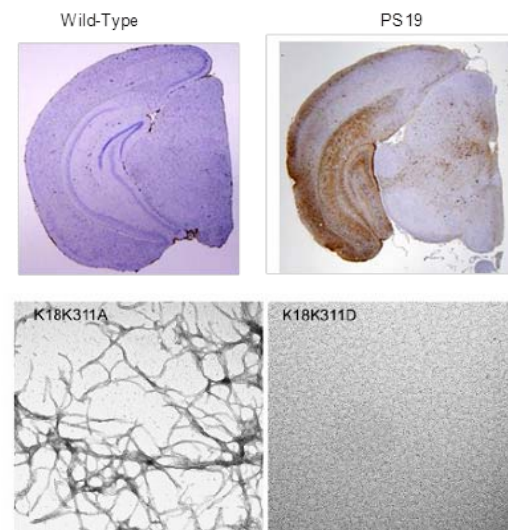


UPenn

- World-class scientific expertise in tau biology (Professors Trojanowski, Lee & Brunden)
- Enabling biological tools and reagents
- Desire to generate new drugs

AstraZeneca

- Drug discovery expertise and technology
- Biomarkers for diagnosis in Alzheimer's Disease
- Desire to generate new drugs



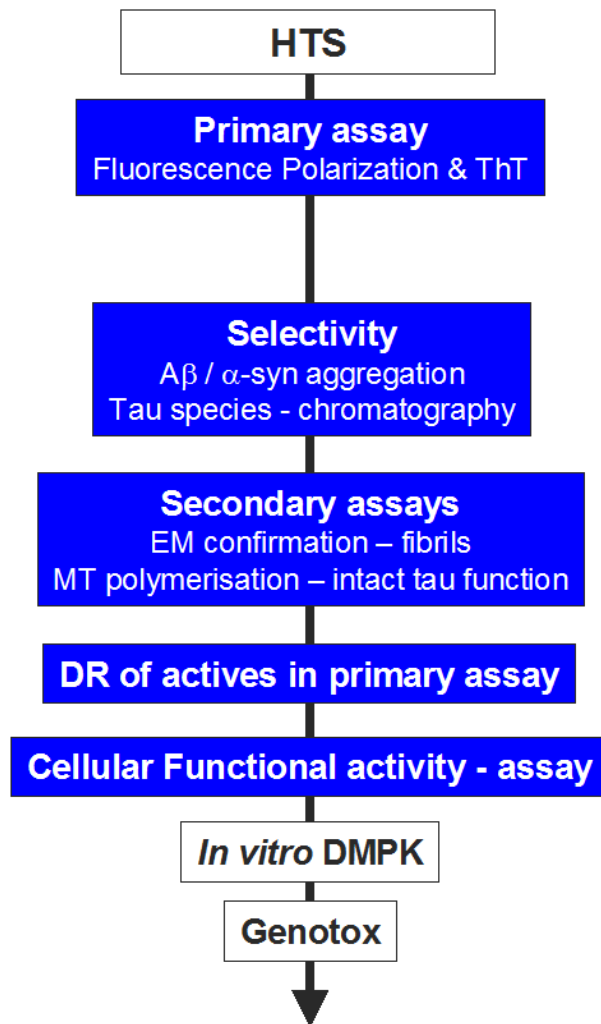
How the alliance with UPenn works

True joint drug discovery program around identifying small molecule inhibitors of Tau protein aggregation

UPenn developed high-throughput assay that measures tau assembly, HTS performed at AZ

Shared workstream to optimize resources and do the work where skills exist

Six-member Joint Research Committee governs alliance with equal number of members from each





Licensing Executives Society
(U.S.A. and Canada), Inc.

CHICAGO, SEPTEMBER 29, 2010

Licensing Executives Society (USA & Canada) Announces 2010 Deals of Distinction™ Awards

**Industry-University-Government Interface (IUGI) Sector Winner
AstraZeneca & University of Pennsylvania**

In February, the University of Pennsylvania (Penn) and AstraZeneca forged a new collaborative research agreement, featuring a significant licensing component, that makes use of their respective talents and resources to generate new Alzheimer's Disease (AD) drug candidates for the clinical development pipeline.



AstraZeneca – Targacept Broad Relationship

Licence and Collaboration – 12/05 – Cognitive Dysfunction & Schizophrenia

- Exclusive in NNR $\alpha 4\beta 2$ agonists (AZD3480)
- 4 year $\alpha 4\beta 2$ research collaboration
- Option right to other NNR compounds in CD&S

License to TC-5214 – 12/09 - MDD

Initial Phase 3 results TC-5214

2005

2006

2007

2008

2009

2010

2011

2012

Option to TC-5619 – 10/07

Declined TC-5619

AZD1446 Progressed to Phase 2 in AD



Collaborations Across Multiple Assets

- **TC-5214**
 - On-going Phase 3 program in MDD (adjunct) and Phase 2b in MDD (monotherapy)
- **AZD3480**
 - Completed multiple Phase 2b trials in AD and CIAS
 - Completed Phase 2a trial in ADHD
 - Ongoing trial in AD
- **AZD1446 issued from R&D Collaboration**
 - Phase 2a in ADHD
 - Progressing to phase 2 in AD
- **TC-5619 (option compound)**
 - Completed Phase 2a in CIAS and ADHD



Working with AstraZeneca in the CNS Field

What we look for:

- Small Molecules and Biologics across phases for
 - Alzheimer's Disease
 - Neuropathic and Nociceptive Pain
 - Parkinson's Disease
- Late Stage Opportunities for Psychiatry

What we offer:

- Focused, innovation-driven integrated, global, biopharmaceutical company
- World class commercial and life cycle management track record
- Partnering is a core priority and long-term commitment
 - Over 1200 partnerships
 - More than 60 significant deals
- 30 years proven experience and collaborative culture
- Quick, open and transparent decision making



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