



Inhibikase Therapeutics

Nasdaq | **IKT**

Therapies in Clinical Development to Reverse the Progression of Neurodegeneration in Parkinson's Disease

1Q 2021 INVESTOR PRESENTATION



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We do not intend our use or display of other entities’ names, trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

Driving Functional Reversal of Parkinson's Disease

- Multi-therapeutic pipeline with emphasis on neurodegeneration
- Lead programs developing drugs targeting a gateway along a common pathway that initiates Parkinson's Disease (PD) inside and outside of the brain
- IkT-148009 shown to therapeutically halt and reverse functional loss inside and outside of the brain in animal models that recreate progressive human disease
- Two INDs filed for Parkinson's Disease and its GI complications
 - Shared Phase 1 study to dose patients mid-February, 2021
- Multiple patent families for lead compound with expiration of 2036 and beyond
- \$20.4 million in grants and contracts from NIH, DoD, the Michael J. Fox Foundation and the Georgia Research Alliance, all peer-reviewed
- Highly experienced and respected management team, consultants, Board of Directors and nearly all KOLs in the field on Scientific Advisory Board

BY 2025, PARKINSON'S DISEASE
DRUG SALES ARE EXPECTED TO

Double

Pharma Insights, 2019

SALES ESTIMATES BY
2025 ARE EXPECTED TO
CREST

\$6.0 Billion




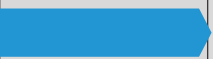




Pharma Insights, 2019

THE COUNTRY WITH THE HIGHEST
DIAGNOSED PREVALENCE IS

The U.S.

DelveInsight, 2019

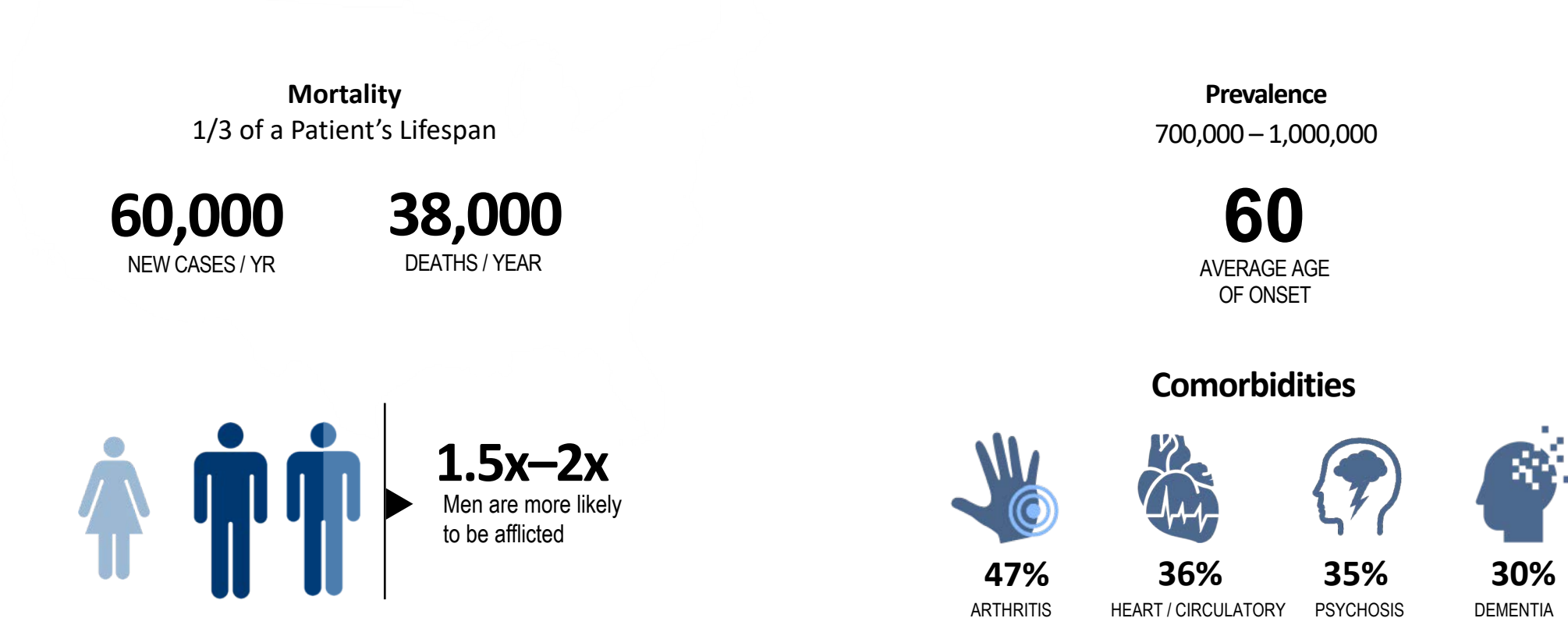
Multi-Indication Pipeline in Neurodegeneration, Oncology and Infectious Disease

				CLINICAL DEVELOPMENT ¹				BIOMARKER		
Drug Target	Drug candidate	Modality	Disease indication	PRECLINICAL DEVELOPMENT	PHASE 1	PHASE 2	PHASE 3	Preclinical target engagement ¹	Clinical target engagement ¹	Can be used for patient selection ¹
Neurodegeneration										
c-Abl	IkT-148009	Small molecule	Parkinson's Disease: Treatment Naïve					Validated	Validating	Yes
c-Abl	IkT-148009	Small molecule	Parkinson's Disease: Early Stage					Validated	Validating	Yes
c-Abl	IkT-148009	Small molecule	Neurogenic Constipation					Validated	Validating	Yes
c-Abl	IkT-148009	Small molecule	Dysphagia					Validated	Validating	Yes
Oncology										
BCR-Abl	IkT-001Pro	Small molecule	Stable-phase CML (orphan indication)					Validated	Validated	Yes
Research Phase										
c-Abl	IkT-148x	Small molecule	Dementia with Lewy Body					Validated	Validating	Unknown
c-Abl	IkT-148x	Small molecule	Multiple System Atrophy					Validated	Validating	Unknown
c-Abl	IkT-1427	Small molecule	Progressive multifocal leukoencephalopathy					Validated	Validating	Yes

¹ Clinical Development progress bars represent the current state of the indicated programs. Four indications will be pursued for IkT-148009, which will be pursued through two INDs, one focused on treatment in the brain in treatment-naïve or early-stage patients and the second focused on GI complications of PD patients. All four indication paths will share the same Phase 1 study in elderly healthy volunteers. The Company anticipates initiating a Phase 1b study in treatment naïve and early stage Parkinson's patients with GI complications for IkT-148009 in the next 12 months subject to additional financing. The Phase 2 study may be shared in whole or in part for all four indications. IkT-148x refers to a series of portfolio compounds being evaluated for these indications in preclinical models that are from the same chemical family as IkT-148009. For biomarker status, 'Validated' refers to proof of target engagement in the target tissue which has been performed using rodent tissues and fluids. We are currently developing methods for using clinical samples to validate our ability to confirm target engagement in patients. 'Validating' in this context indicates ongoing efforts to prove target engagement using proprietary sources and methods under development from human tissues and fluids. Target engagement measures if and to what extent a compound occupies its target. 'Can be used for patient selection' refers to our ability to use one or more markers we are currently 'Validating' to screen patients for the presence of that marker as a means of defining the patients most likely to benefit from the proposed treatment.

Parkinson's Disease in the U.S.¹

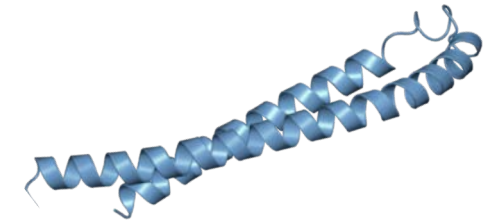
Large Market, Opportunity For Disease Modification



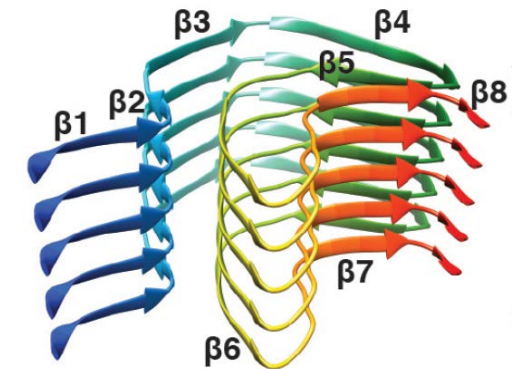
Clarification of Causation in Parkinson's Reveals c-Abl as a Primary Culprit

- Parkinson's Disease (PD) is a neurodegenerative disease which limits function of nerve cells throughout the brain and gut.
- PD conditions include:

Tremors	Slowed Movement	Impaired Balance	Permanent Constipation
Speech Loss	Cognitive Decline	Memory Loss	and Reflux Disease
- α -Synuclein, an abundant and non-essential protein, has long been thought to be linked to the cause of Parkinson's Disease
 - Normally, α -Synuclein plays a role in neurotransmission by dopamine. Dopamine deficiency is believed to be related to the start and stop of voluntary and involuntary movements
 - In the disease state, α -Synuclein is remodeled into protein aggregates we call plaques, which have been thought to be the cause of disease.
- New research by the Company and its collaborators demonstrate that plaques of **α -synuclein cannot cause disease unless chemically modified by the Abelson tyrosine kinase, c-Abl**. The Company believes this modified plaque, which is entirely within the affected neurons, is the true causative agent of PD, making c-Abl an important therapeutic target.



α -Synuclein is normally in a helix-turn-helix configuration¹

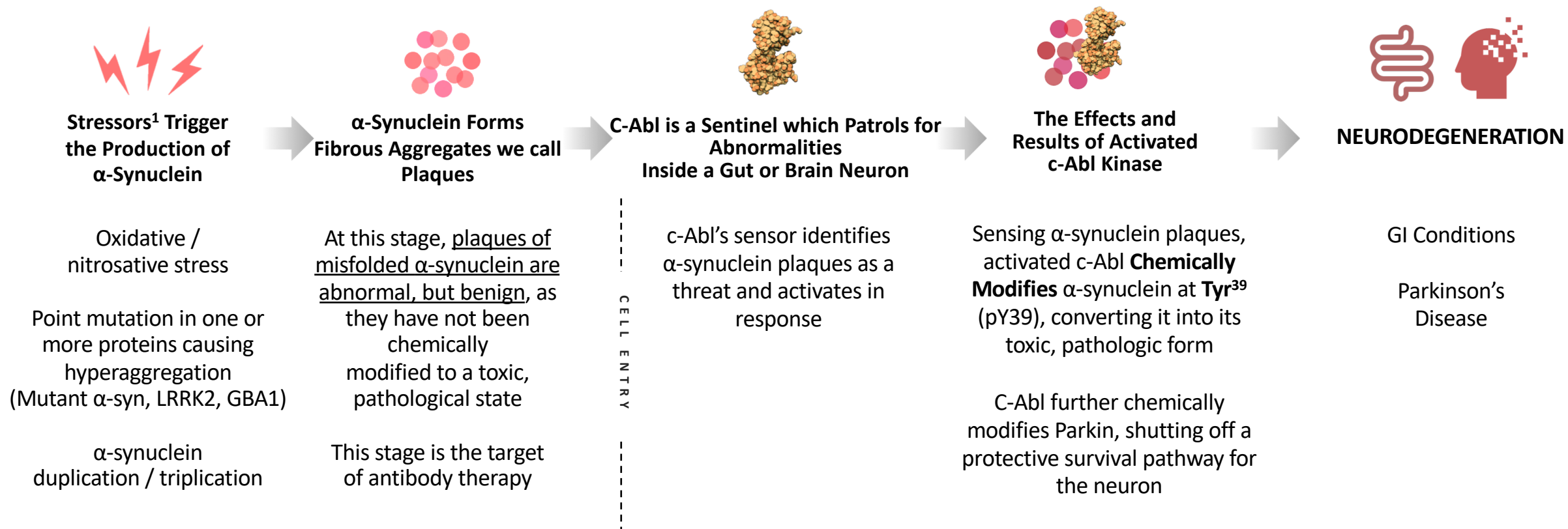


In the disease state, α -Synuclein reorganizes to form fibrous aggregates ("Plaques")²

¹Biochim Biophys Acta. 1818:1013-8 (2012)

²Pathogens 7:50 (2018)

Stressors Trigger the Production of α -Synuclein Plaques Which Are Chemically Modified Into a Toxic Form Leading to Neurodegeneration



¹Nat Rev Neurosci. 2, 492–501 (2001)

²Werner and Olanow (2020), under review

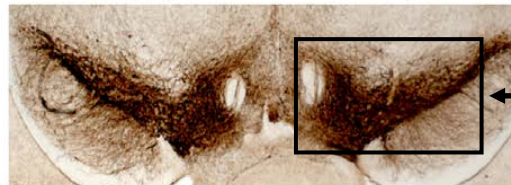
α -Synuclein Plaques Do Not Cause Disease Without c-Abl Modification in Humanized Preclinical Models¹

α -Synuclein plaque in the **ABSENCE OF c-Abl CAUSES NO NEURODEGENERATION AFTER 6 MONTHS**

AAV-tTA (6 month post inj)

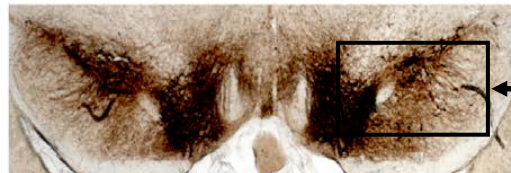
Non Inj

Inj



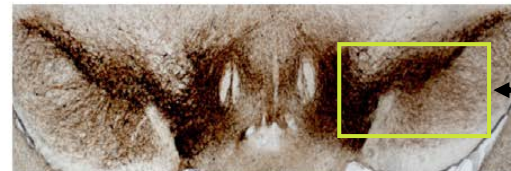
Control

Injection (Inj) of an expression vector for the A53T form of synuclein doesn't degrade neurons until the expression of A53T is turned on



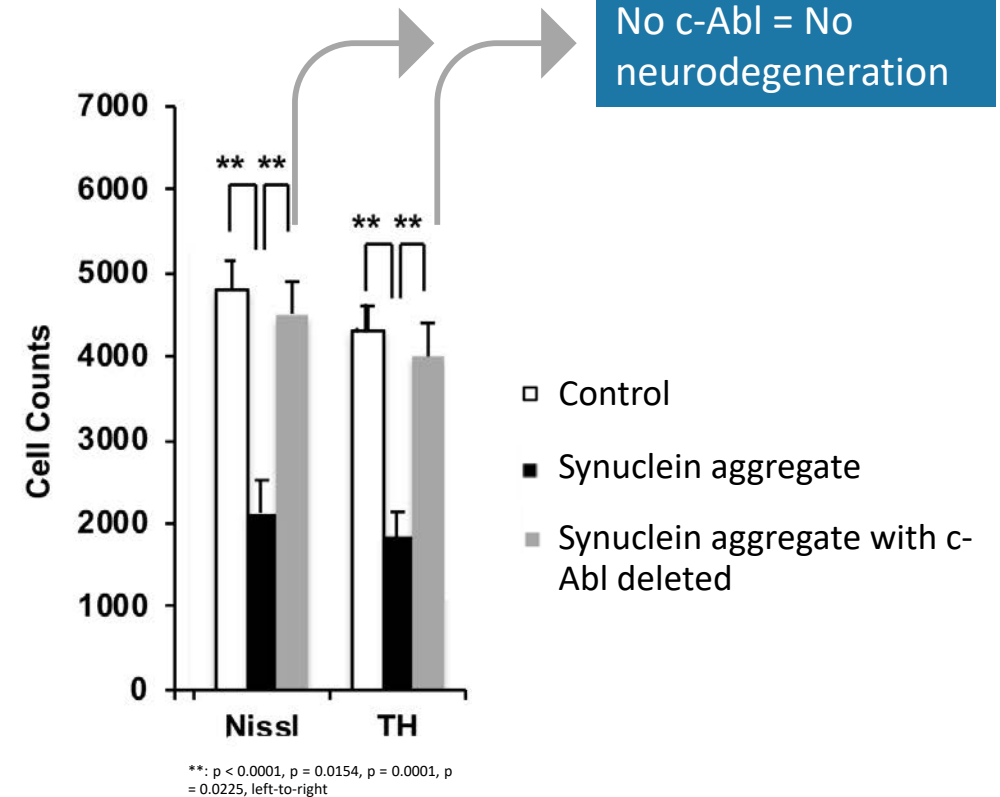
TetP-A53T α -syn

Once turned on, A53T induces 50% neurodegeneration in 6 months. NOTE loss is visible in the dark patches of stained neurons on the right half. The left half was an internal control and is unaffected.



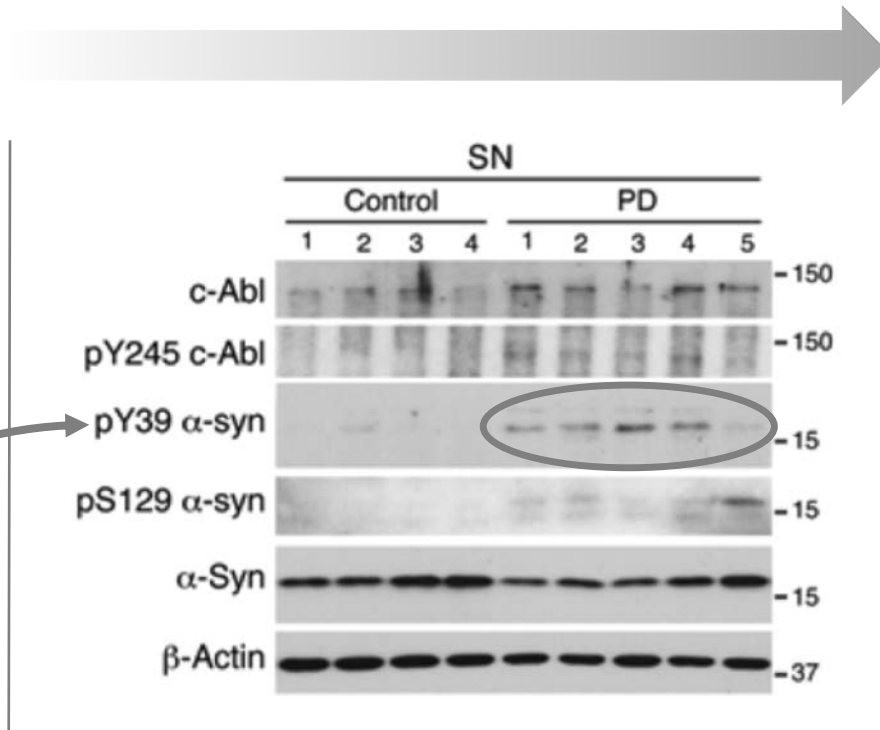
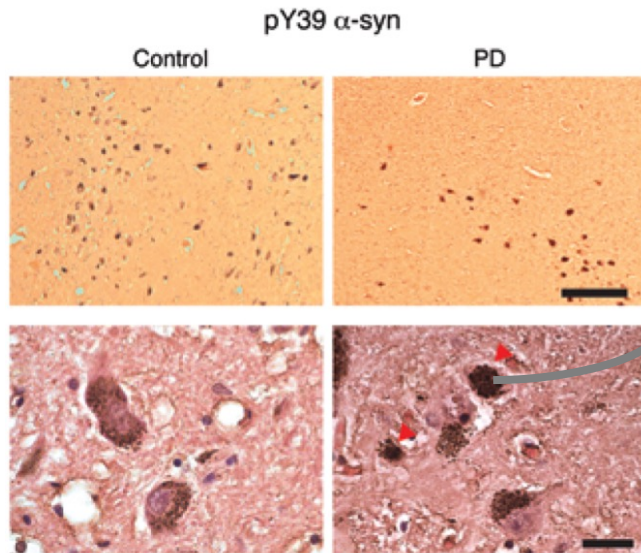
c-Abl-KO/TetP-A53T α -syn

When the expression of A53T is turned on, but c-Abl is genetically deleted from the mouse brain, you don't get any neurodegeneration. Thus, even though the clumps of α -syn are present in the right region of the brain, they don't cause disease until c-Abl acts on them

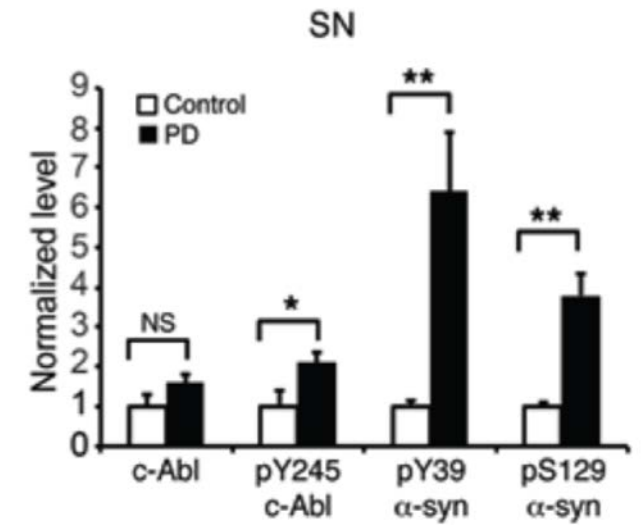


Pathologic, c-Abl-Modified α -Synuclein (pY39) is Present in Parkinson's Patient Brain¹

Toxic pY39- α -Synuclein
Prominent in Lewy Bodies



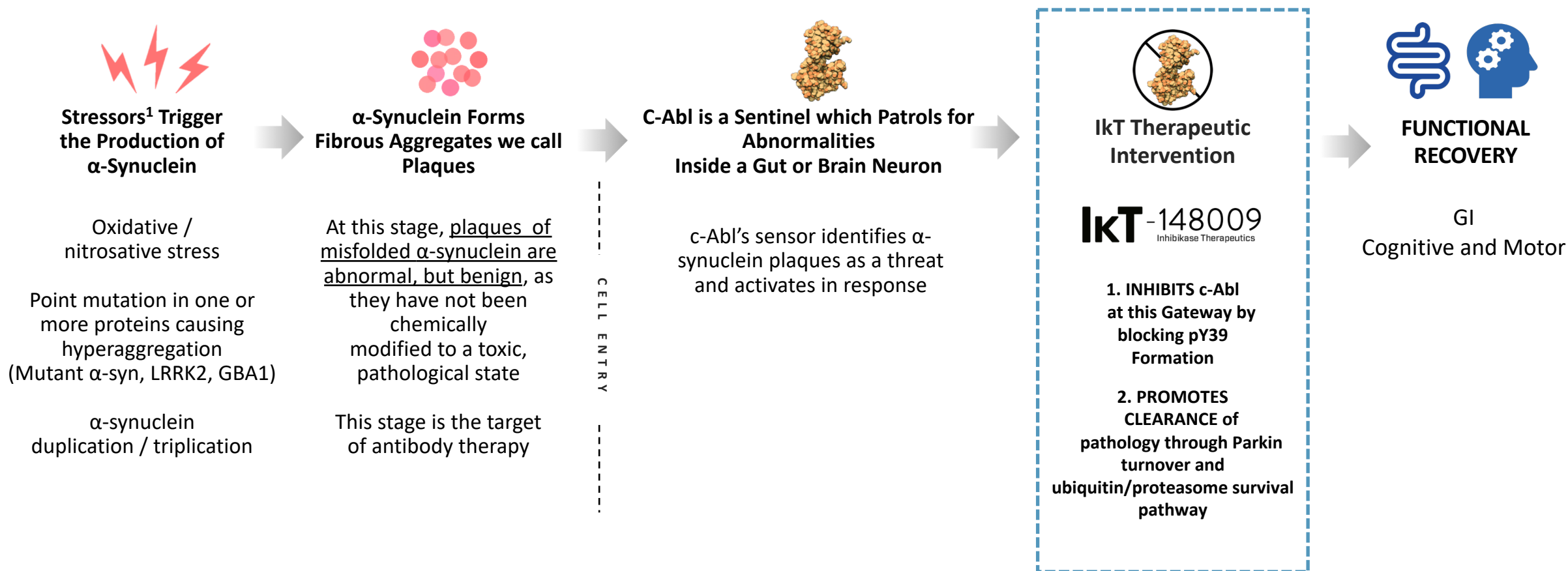
Toxic pY39- α -Synuclein Abundant
In Substantia Nigra (SN) of Patients



IkT-148009 c-Abl Inhibition May Drive Functional Reversal

Inhibikase Therapeutics

The Gateway that Converts α -Synuclein into ITS TOXIC FORM CAN BE SUPPRESSED BY INHIBITING c-ABL



¹Nat Rev Neurosci. 2, 492–501 (2001)

²Werner and Olanow (2020), under review

Low Toxicity, Brain Penetrant c-Abl Inhibitor in Clinical Development

NOVEL ABL KINASE INHIBITOR	RELATIVE POTENCY
148019	8
148003	12
148027	17
148032	23
148009	18*
01427	36
Imatinib	1

14-Day Toxicology in Rat/Monkey	
Human equivalent dose of 600 mg	
Cardiovascular	None
Renal	None
Liver	None
Bone marrow	None
Sternum	None
Blood	None
PBMCs	Slight increase in neutrophils within normal limits
Cytotoxicity	None in primary or mature cells
Sustainable brain concentration	> 1 micromolar

- Ikt-148009**
Inhibikase Therapeutics
- No observed toxicity from off target kinase inhibition
 - No CNS toxicity
 - No toxicity observed even on 210+ day dosing >150 mg/kg/day
 - Nearly complete neuroprotection in a-synuclein progressive disease models
 - Multi-kilogram process scale development under GMP completed, 6 step synthesis

*Compositions of matter **patent protection through 2036**

Phases and Development Intervals

Single Ascending Dose (SAD)

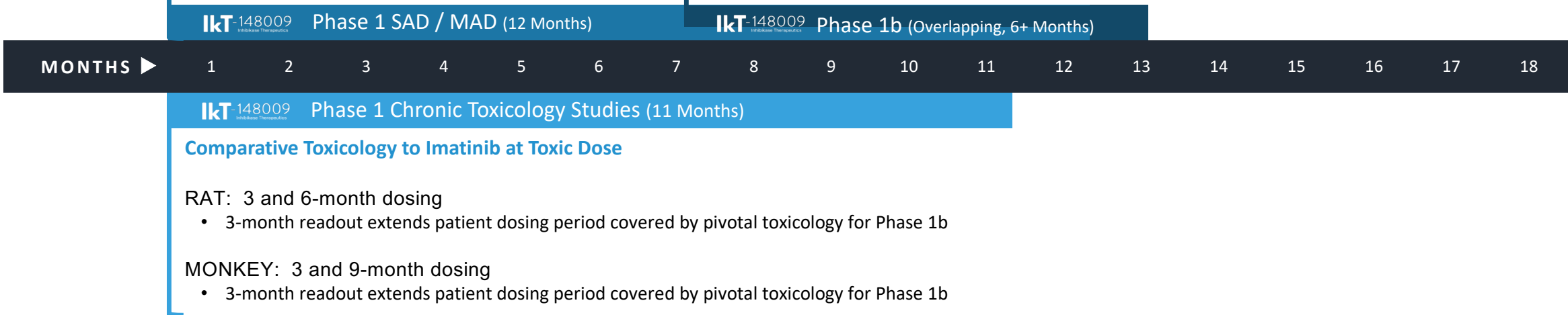
- 8 dosing cohorts (25 – 400 mg, 1x/day)
- 8 patients/cohort, 2:1 randomized
- Sentinel dosing
- Primary objectives safety, tolerability , pharmacokinetics (PK), urine and plasma concentrations

Multiple Ascending Dose (MAD)

- 4 dosing cohorts, doses determined from SAD PK and safety
- 12 patients/dose, 2:1 randomized, 7 day dosing 1x/day
- Primary objectives safety, tolerability, pharmacokinetics (PK), urine, plasma spinal fluid concentrations, trough concentration and Maximum Tolerated Dose
- Protocol to be amended to interleave MAD study with last 4 cohorts of SAD study

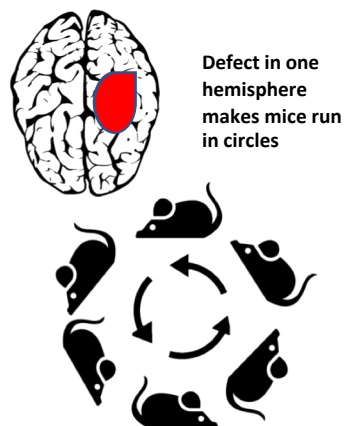
Multiple Ascending Dose (MAD)

- Subject to FDA review and agreement
- Enroll cohort of Parkinson’s patients (treatment naïve and early stage) with GI complications at middle of MAD period
- Timing coordinated with 3 month toxicology readout
- Primary objectives safety, tolerability, pharmacokinetics
- Secondary objectives functional assessment of motor and cognitive function in brain, motor function in GI, target engagement



Reversal of Functional Loss Following Oral Therapeutic Administration of Ikt-148009 in Mice Humanized for Parkinson's Disease in Brain

Baseline Neuromuscular Coordination Behavioral Marker



Healthy Mice Run In Circles at the Average Rate of 25 Turns : 10 Min

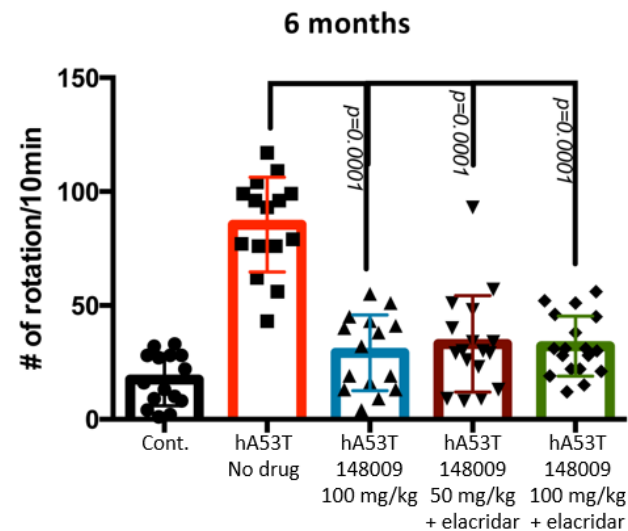
Toxic Levels of Synuclein Are Introduced Into One Side of the Mouse Brain



Toxicity renders the mice trembling and only able to run in circles



Treatment Started 6 Weeks After Onset of Conditions



Near Normal Behavior Returned Following Treatment

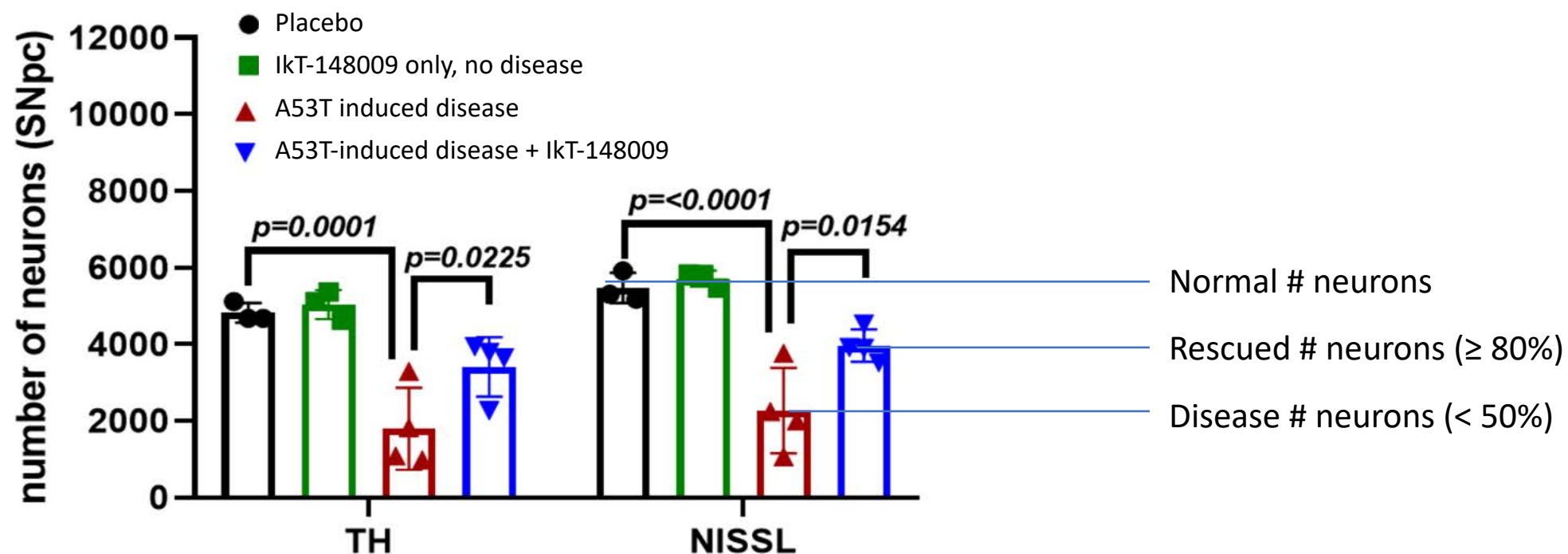


Mice completed 30 turns/10 min when treated a dose of 100 mg/kg dose

NEARLY COMPLETE RESCUE

Therapeutic Treatment With Oral IkT-148009 Preserves Neural Anatomy

IkT-148009 restores function to neurons in the brain



Gastrointestinal Tract Offers Unique Opportunity to Accelerate Development

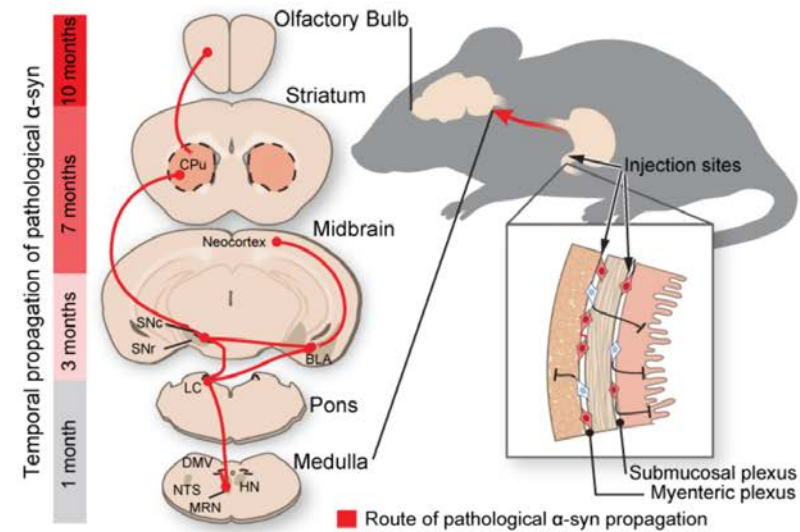
Parkinson's May Begin in the Gut

- Easy access
- Can demonstrate disease benefit with quantitative endpoints
- Biopsy and Biomarkers
- Large effect size

GI disorders resulting from kinase modification of α -synuclein:

- Dysphagia
- Unresolvable constipation
- Gastroesophageal reflux
- Gastroparesis

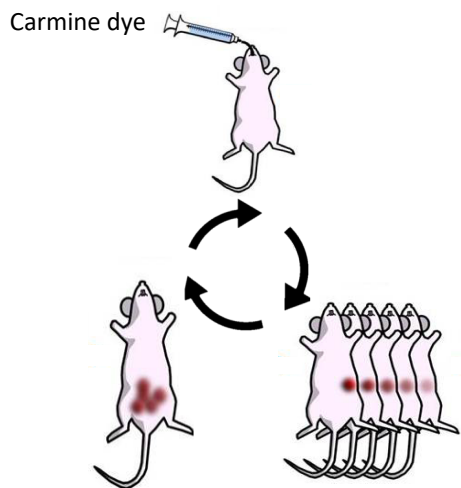
The Gut-Brain Connection Enables Innovation in Trial Design



Introduction of dysfunctional synuclein in the **gut leads to progressive disease that mirrors the human disease course in the brain**

Therapeutic Administration of Oral Ikt-148009 Reverses Functional Loss in the GI Tract in Mice Humanized for Parkinson's Disease in the GI

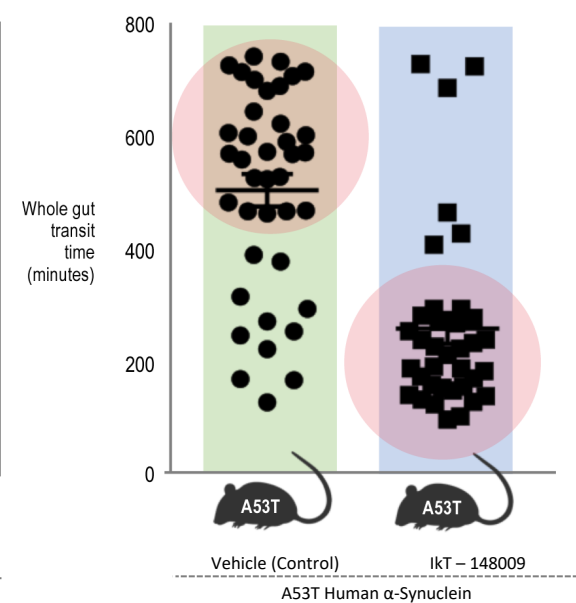
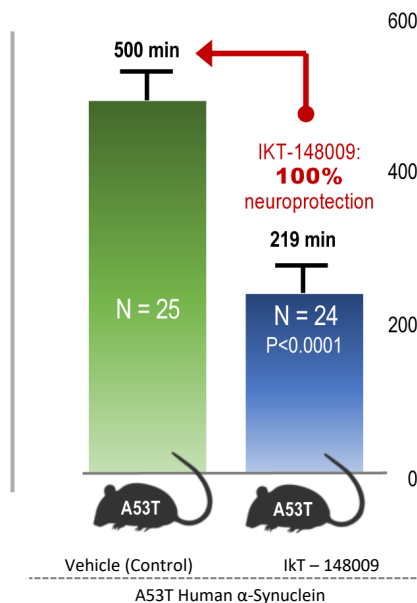
METHOD OF MEASUREMENT
 α -Synuclein Aggregates Introduced Into Gut Slows Gut Transit Time



Neuron count read out by Whole Gut Transit Time - The time it takes for a mouse to defecate

POST TREATMENT RESULTS

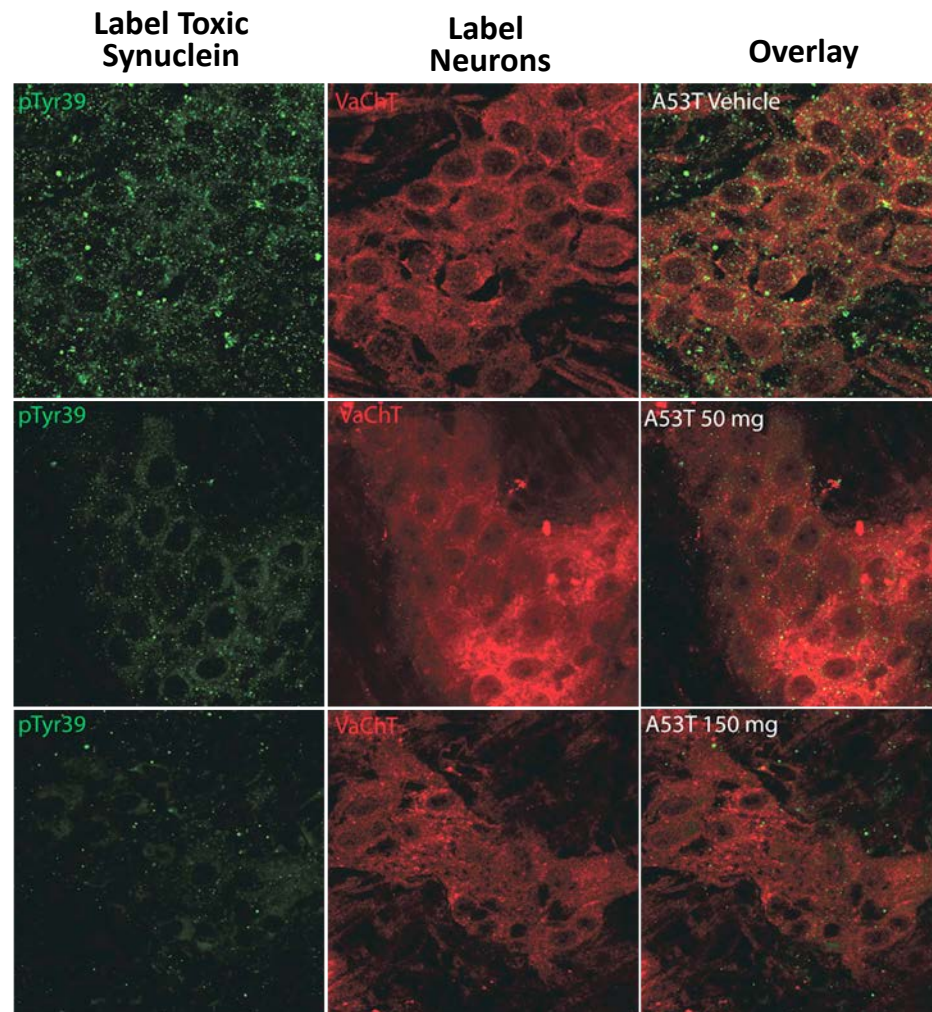
At 3 months defecation slows to 500 min (3x normal); At 6 months defecation slows to 800 min (5x normal); Normal = 165 min



NOTES

1. If it weren't for 6 outliers in 96 measures, average would be 170 min, essentially 100% recovery.
2. We find the neuroanatomy is nearly completely restored by measuring the number and distribution of neural ganglia in the tissue.

Functional Reversal of GI Defect Occurs Concomitantly with Clearance of Toxic α -Synuclein Following Oral IkT-148009 Treatment



IkT-148009 nearly clears pathological α -synuclein (green dots have been cleared)

In Pre-Clinical Models

- IKT-148009 drives functional recovery inside and outside of the brain
- IKT-148009 drives clearance of the toxic form of α -synuclein
- IKT-148009 evaluation in the GI offers unique paths for clinical success

Targeting c-Abl Can Block the Path to Neurodegeneration

Management Team with Deep Experience in Drug Development and Commercialization

Executive

Milton Werner, PhD President & CEO

Previously, Dr. Werner served as Director of Research at Celtaxsys. From September 1996 until June 2007, Dr. Werner was a Head of the Laboratory of Molecular Biophysics at The Rockefeller University in New York City. Throughout his scientific career, Dr. Werner has been an innovator integrating chemistry, physics, and biology into a comprehensive approach to solving problems in medicine. Dr. Werner is the author or co-author of more than 70 research articles, reviews, and book chapters and has given lectures on his research work throughout the world.

Joseph Frattaroli, CPA Chief Financial Officer

Mr. Frattaroli is a certified public accountant with more than 15 years of experience in public company filings and compliance for Nasdaq and OTC Markets companies. Previously, he provided chief financial officer and consulting services for several emerging biopharmaceutical and medical device companies, with responsibilities that included capital formation, deal structuring, and assisting private companies in their transition to becoming publicly traded SEC registrants.

Clinical Development Team Collaboration with Clintrex Research Corporation

Terence Kelly, PhD, Contractor, Head of MedChem & Drug Discovery

Dr. Kelly is a 30-year pharmaceutical industry veteran and has served as a member of the board of directors of Cardax since June 2014. He previously held several positions at CoMentis, including President and CEO. From July 2002 to December 2009, he served as Vice President of Medicinal Chemistry at Boehringer Ingelheim Pharmaceuticals. Dr. Kelly developed processes for the RAMP drug discovery program with Dr. Werner.

Roger Rush, PhD, Contractor, Head of Preclinical Research

Dr. Rush is an experienced veteran of the pharmaceutical industry with more than 30 years of experience. He has contributed to more than 20 IND, CTA, and product license submissions and approved drugs, including nicardipine (Cardene), ranolazine (Ranexa), Foscan, and zileuton (Zyflo CR). Previously, he was Vice President, Preclinical Development for Idenix Pharmaceuticals, Inc., a wholly owned subsidiary of Merck & Company, Inc., where he managed the DMPK, toxicology, and discovery research that led to the identification of lead molecules to treat Hepatitis C virus.



Board of Directors

Mr. Dennis Berman has been a co-founder, board member, and/or seed investor in many private biotechnology and technology companies, five of which have gone public. He currently serves as the President of Molino Ventures, LLC a board advisory and venture capital firm and was co-founder and Executive Vice President of Corporate Development of Tocagen. Other public companies for which Mr. Berman has served as a seed investor, co-founder, and/or board member include Intervu (one of the first software-as-a-service companies), which was acquired by Akamai; Kintera, Inc. (an online fundraising pioneer), which was acquired by Blackbaud; Gensia (focused on purine/pyrimidine metabolism compounds), which was acquired by Teva; and Viagene (the first U.S. gene therapy company that utilized a non-replicating retrovirus), which was acquired by Chiron/Novartis. Mr. Berman also was a seed investor in Calabrian (a water treatment company), which was acquired by SK Capital.

Dr. Paul Grint, MD has more than two decades of experience in biologics and small-molecule research and development, including the successful approval and commercialization of products in the infectious diseases, immunology, and oncology therapeutic areas. He has most recently served on the Board of Cardea Bio since April, 2020, on the Boards of Directors of Amplyx Pharmaceuticals since 2016 and Synedgen since 2014 and was CEO and member of the Board of Directors of AmpliPhi Biosciences from 2015 through 2019. Dr. Grint has also served in senior management roles at Cerexa, Forest Laboratories, Kalypsys, Pfizer, IDEC Pharmaceuticals, and Schering-Plough Corporation. He is currently a board member at Amplyx Pharmaceuticals and Synedgen. He is a Fellow of the Royal College of Pathologists, a member of numerous professional and medical societies, and holds a bachelor's degree from St. Mary's Hospital College, University of London and a medical degree from St. Bartholomew's Hospital College, University of London.

Dr. Roy Freeman, MD is Professor of Neurology at the Harvard Medical School and Director of the Center for Autonomic and Peripheral Nerve Disorders in the Department of Neurology at Beth Israel Deaconess Medical Center in Boston, Massachusetts. Dr. Freeman is former chairman of the World Federation of Neurology research group on the autonomic nervous system, former President of the American Autonomic Society, and former chairman of the Autonomic Section of the American Academy of Neurology. Dr. Freeman is Editor-in-Chief of Autonomic Neuroscience: Basic and Clinical and on the editorial boards of The Clinical Journal of Pain, Pain: Clinical Updates, and Clinical Autonomic Research. He is a founder of several companies in pain and neurodegenerative disease and is on the scientific advisory boards of many large and small pharmaceutical and biotechnology companies.

Ms. Elizabeth O'Farrell recently retired from a 25-year career with Eli Lilly and Company, lastly serving as Chief Procurement Officer and Leader, Global Head of Shared Services from 2012 to 2017. Prior to that, she advanced through a number of executive management positions including Senior Vice President, Policy and Finance; Senior Vice President, Finance; Chief Financial Officer, Lilly USA; Chief Financial Officer, Lilly Canada; and General Auditor. Before joining Eli Lilly, Ms. O'Farrell was an accountant with Boise Cascade Office Products and served as an auditor at Whipple & Company and Price Waterhouse. Ms. O'Farrell currently serves on the board of PDL BioPharma, where she is a member of the Audit Committee and Compensation Committee and Geron Corporation where she is a member of the Audit Committee. Ms. O'Farrell holds a BS in accounting with honors and an MBA in management information systems, both from Indiana University.

Industry-Leading Advisors

Robert Hauser, MD

Professor of Neurology, University of South Florida College of Medicine - Director USF Parkinson's Disease and Movement Disorders Center

Jeffrey Kordower, PhD

Alla V and Solomon Jesmer Professor of Aging & Neurological Sciences Rush University Medical Center

Dr. Ken Marek

President and Senior Scientist, Institute of Neurodegenerative Disorders

Dr. Ted Dawson, MD, PhD

Neurodegeneration and Stem Cell Programs, Institute for Cell Engineering, Departments of Neurology, Physiology, Pharmacology, and Molecular Sciences - The Johns Hopkins University School of Medicine

Dr. Valina Dawson, PhD

Neurodegeneration and Stem Cell Programs, Institute for Cell Engineering, Departments of Neurology and Physiology The Johns Hopkins University School of Medicine

Dr. Warren Olanow, MD, FRCPC

Henry P. and Georgette Goldschmidt Professor and Chairman Emeritus, Mount Sinai School of Medicine Clintrex, Inc.

Dr. Karl Kieburtz, MD, MPH

Robert J. Joynt Professor in Neurology, Senior Associate Dean for Clinical Research, Director of the Clinical & Translational Science Institute, Founder Center for Human Experimental Therapeutics (CHET)- University of Rochester Medical Center Clintrex, Inc.

Dr. Jay Pasricha, MBBS, MD

Director, Johns Hopkins Center for Neurogastroenterology Professor of Medicine

Upcoming Milestones

OBJECTIVES

Pre-clinical Activities

Oncology Prodrug, IKT-001Pro:
Commercial product GMP mfg.
IND filing

Clinical development for IKT-148009

Elderly healthy volunteer Phase 1
Comparative chronic toxicology rat and monkey

**Team Build-out, Medicinal Chemistry, Pre-clinical
Research, G&A**

Contact Us

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