

Parkinson's disease drug therapies in the clinical trial pipeline: 2020

Supplement 1: Master list

Therapy Classifications assigned in Pipeline Review <i>Table sorted by Phase &amp; Agent; DMT=disease-modifying therapy; ST=symptomatic therapy</i>					Active* Parkinson's disease drug trials in Phase 1, 2, 3 (n=145) trial data: ClinicalTrials.gov, as of January 21, 2020 <i>*ClinicalTrials.gov "Status" = "Recruiting", "Not yet recruiting", "Active, not recruiting", "Enrolling by invitation"</i>							
Agent	Therapeutic Purpose (DMT or ST)	Therapy Category	Novel, Repurposed, Reformulation or New Claim	"Approved For" if Repurposed	Phase	NCT Number (ClinicalTrials.gov ID)	Title	Sponsor/Collaborators	Estimated Enrollment	Start Date	Estimated Completion Date	Estimated Trial Duration (years)
Donepezil	ST (Gait and balance)	Non-dopaminergic symptom relief	Repurposed	Alzheimer's disease	early Phase 1	NCT03599726	Improving Walking Automaticity in Parkinson's Disease: Levodopa or Donepezil	Oregon Health and Science University Medical Research Foundation, Oregon	20	Jul 2018	Jul 2019	1.0
IPS-NSC cells	ST (Movement)	Cell therapy	Novel		early Phase 1	NCT03815071	A Study on the Treatment of Parkinson's Disease With Autologous Neural Stem Cells	Allife Medical Science and Technology Co., Ltd. The First People's Hospital of Yunnan Province First People's Hospital of Yunnan Province New Kunhua Hospital Henan Provincial Hospital Beijing Hospital	10	Feb 2019	Feb 2021	2.0
Methylphenidate & Atomoxetine	ST (Gait and balance)	Non-dopaminergic symptom relief	Repurposed	ADHD	early Phase 1	NCT02879136	TAME-PD - Physical Therapy, Atomoxetine and, Methylphenidate, to Enhance Gait and Balance in Parkinson's Disease	Shnehal Patel The Cleveland Clinic	42	Dec 2016	Dec 2020	4.0
Saracatinib	ST (PD psychosis)	Kinase inhibitor	Novel		early Phase 1	NCT03661125	SRC Inhibition as a Potential Target for Parkinson's Disease Psychosis	King's College London AstraZeneca King's College Hospital NHS Trust	30	Apr 2019	Sep 2021	2.4
UDCA (Ursodeoxycholic acid)	DMT	Energy and mitochondria	Repurposed	Gallstones & primary biliary cholangitis	Phase 1	NCT02967250	Brain Bioenergetics in Parkinson's Disease and Response to Repeated Oral UDCA Treatment	University of Minnesota	20	Apr 2020	Mar 2022	1.9
AAV2-GDNF	DMT	Neurotrophic factors	Novel		Phase 1	NCT01621581	AAV2-GDNF for Advanced Parkinson's Disease	NINDS National Institutes of Health Clinical Center (CC)	25	May 2012	Feb 2022	9.7
AAV2-GDNF	DMT	Neurotrophic factors	Novel		Phase 1	NCT04167540	GDNF Gene Therapy for Parkinson's Disease	Brain Neurotherapy Bio, Inc.	12	Dec 2019	Jun 2026	6.5
ABBV-0805	DMT	Immunotherapy	Novel		Phase 1	NCT04127695	A Study to Evaluate the Safety and Tolerability of ABBV-0805 in Patients With Parkinson's Disease	AbbVie	32	Oct 2019	Jul 2021	1.7
anle138b	DMT	Targeting aSN	Novel		Phase 1	NCT04208152	A First-in-Human Study of Single and Multiple Doses of anle138b in Healthy Subjects	MODAG GmbH Quotient Sciences Aptuit (Verona) Srl, an Evotec Company	92	Dec 2019	Oct 2020	0.8
Apomorphine (009-A)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1	NCT04157933	Staccato Apomorphine Multi-dose PK and PD in Patients With Parkinson's Disease	Alexza Pharmaceuticals, Inc.	32	Oct 2019	Mar 2020	0.4
BIIB054 (Cinpanemab)	DMT	Immunotherapy	Novel		Phase 1	NCT03716570	A Study to Evaluate Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of BIIB054 in Japanese Participants With Parkinson's Disease	Biogen	24	Mar 2019	Aug 2021	2.4
BIIB094	DMT	Other	Novel		Phase 1	NCT03976349	A Study to Evaluate the Safety, Tolerability, and Pharmacokinetics of BIIB094 in Adults With Parkinson's Disease	Biogen Ionis Pharmaceuticals, Inc.	62	Aug 2019	Jan 2022	2.4
Buspirone	ST (LID)	Non-dopaminergic symptom relief	Repurposed	Anxiety disorders	Phase 1	NCT02589340	Buspirone, in Combination With Amantadine, for the Treatment of Levodopa-induced Dyskinesia	Oregon Health and Science University Portland VA Medical Center	15	Jan 2016	Dec 2019	3.9

Cu(II)ATSM	DMT	Other	Repurposed	PET imaging agent	Phase 1	NCT03204929	Dose Escalation Study of Cu(II)ATSM in Parkinson's Disease	Collaborative Medicinal Development Pty Limited	38	Aug 2017	Nov 2019	2.3
DNL151	DMT	Kinase inhibitor	Novel		Phase 1	NCT04056689	Study to Evaluate DNL151 in Subjects With Parkinson's Disease	Denali Therapeutics Inc.	34	Jul 2019	Jun 2020	0.9
Droxidopa & Midodrine	ST (nOH)	Non-dopaminergic symptom relief	Repurposed	Neurogenic orthostatic hypotension	Phase 1	NCT02897063	Effects of Midodrine and Droxidopa on Splanchnic Capacitance in Autonomic Failure	Vanderbilt University Medical Center	34	Sep 2016	Aug 2021	4.9
ENT-01 (Kenterin)	ST (PD dementia)	Targeting aSN	Novel		Phase 1	NCT03938922	A Study to Evaluate ENT-01 for the Treatment of Parkinson's Disease Dementia	Enterin Inc.	40	Jun 2019	Feb 2020	0.7
Exenatide	DMT	GLP-1 agonist	Repurposed	Type 2 diabetes	Phase 1	NCT03456687	Effects of Exenatide on Motor Function and the Brain	University of Florida NINDS	15	Jun 2018	Apr 2021	2.8
FB-101	DMT	Kinase inhibitor	Novel		Phase 1	NCT04165837	Safety, Tolerability, and Pharmacokinetics of Oral FB-101 in Healthy Subjects	1ST Biotherapeutics, Inc.	48	Oct 2019	Jun 2020	0.7
Foliglurax (PXT002331)	ST (Movement)	Non-dopaminergic symptom relief	Novel		Phase 1	NCT04175132	Binding of Foliglurax to Regions in the Brain in Healthy Participants and in Patients With Parkinson's Disease (PD)	H. Lundbeck A/S	17	Nov 2019	Mar 2020	0.3
Infudopa	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1	NCT03419806	Study Comparing Intravenous and Subcutaneous Infudopa With Intestinal Duodopa in Patients With Parkinson's Disease	Vastra Gotaland Region The Swedish Research Council Dizlin Medical Design AB GÅrteberg University	28	Feb 2018	Dec 2018	0.8
ISC-hpNSC	ST (Movement)	Cell therapy	Novel		Phase 1	NCT02452723	A Study to Evaluate the Safety of Neural Stem Cells in Patients With Parkinson's Disease	Cyto Therapeutics Pty Limited	12	Jul 2016	Jun 2020	3.9
Lu AF82422	DMT	Immunotherapy	Novel		Phase 1	NCT03611569	Lu AF82422 in Healthy Non-Japanese and Japanese Subjects and in Patients With Parkinson's Disease	H. Lundbeck A/S	44	Jul 2018	Jun 2020	1.9
LY03003	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1	NCT03733561	A Study to Assess Pharmacokinetic Profiles of LY03003 and Neupro	Luye Pharma Group Ltd.	40	Nov 2018	Apr 2019	0.5
MEDI1341	DMT	Immunotherapy	Novel		Phase 1	NCT03272165	Single Ascending Dose Study of MEDI1341 in Healthy Volunteers	AstraZeneca Covance MMS Holdings, Inc Catalent	48	Oct 2017	Nov 2020	3.1
Mesenchymal stem cells	DMT	Cell therapy	Novel		Phase 1	NCT03550183	Umbilical Cord Derived Mesenchymal Stem Cells Therapy in Parkinson's Disease	Hebei Newtherapy Bio-Pharma technology Co., Ltd.	20	Jan 2018	Dec 2022	5.0
NBTX-001	ST (Movement and NMS)	Other	Repurposed	Xenon approved as general anesthesia, but not NBTX-001	Phase 1	NCT04097080	Comparative Controlled Study of Analgesic, Antiasthenic and Anti-Anxiety Effects of Xenon in Patients With Parkinson's Disease	Nobilis Therapeutics Inc.	60	Nov 2019	Dec 2021	2.1
Opicapone	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1	NCT03820037	Relative Bioavailability and Bioequivalence of Opicapone	Bial - Portela C.S.A.	45	Mar 2019	Jun 2019	0.3
PRIM-DJ2727	DMT	Microbiome/GIT	Novel		Phase 1	NCT03671785	Study of the Fecal Microbiome in Patients With Parkinson's Disease	The University of Texas Health Science Center, Houston Kelsey Research Foundation	12	May 2019	Dec 2020	1.6
Sargramostim	DMT	Other	Repurposed	Bone transplantation stimulator	Phase 1	NCT03790670	Biomarker Assessments of Leukine During Treatment of Parkinson's Disease	University of Nebraska	5	Jan 2019	Dec 2020	1.9
SER-214 (Rotigotine polymer conjugate)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1	NCT02579473	A Study of Weekly Subcutaneous Injections of SER-214 in Subjects With Parkinson's Disease (PD), to Determine the Safety, Tolerability and Pharmacokinetic (PK) Profile of SER-214	Serina Therapeutics	20	Jan 2016	Dec 2020	5.0
TRANSEURO (hfVM)	ST (Movement)	Cell therapy	Novel		Phase 1	NCT01898390	TRANSEURO Open Label Transplant Study in Parkinson's Disease	University of Cambridge Lu	40	May 2012	Mar 2021	8.8
UB-312	DMT	Immunotherapy	Novel		Phase 1	NCT04075318	Study of UB-312 in Healthy Participants and Parkinson's Disease Patients	United Neuroscience Ltd. Centre for Human Drug Research, Netherlands Worldwide Clinical Trials	62	Aug 2019	Jun 2021	1.8

VY-AADC01	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1	NCT01973543	Safety Study of AADC Gene Therapy (VY-AADC01) for Parkinson's Disease	Neurocrine Biosciences University of California, San Francisco Veristat, Inc. Feinstein Institute for Medical Research Oregon Health and Science University Voyager Therapeutics	15	Oct 2013	Dec 2019	6.2
VY-AADC01	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1	NCT03065192	Safety and Efficacy Study of VY-AADC01 for Advanced Parkinson's Disease	Neurocrine Biosciences Voyager Therapeutics	16	May 2017	Dec 2021	4.6
XC130-A10H	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1	NCT04043338	Single Ascending Dose Study Investigating the Safety, Tolerability, and PK of XC130-A10H in Healthy Adult Subjects	Xoc Pharmaceuticals Celerion	40	Aug 2019	Jan 2020	0.5
Young Plasma infusions	DMT	Other	Novel		Phase 1	NCT02968433	The Stanford Parkinson's Disease Plasma Study	Stanford University	15	Nov 2016	Dec 2019	3.1
CDNF (Cerebral Dopamine Neurotrophic Factor)	DMT	Neurotrophic factors	Novel		Phase 1 Phase 2	NCT03775538	Safety of CDFN by Brain Infusion in Patients With Parkinson's Disease. Extension to HP-CD-CL-2002 Clinical Study	Herantis Pharma Plc. Renishaw plc.	15	Jul 2018	Jun 2020	2.0
Clarithromycin	ST (Movement)	Non-dopaminergic symptom relief	Repurposed	Antibiotic	Phase 1 Phase 2	NCT03440112	Modulation of GABA-A Receptors in Parkinson Disease-Clarithromycin Arm	Nicolaas Bohnen NINDS University of Michigan	30	Jan 2018	Nov 2021	3.8
Fetal Mesencephalic Neuronal Precursor Cells	ST (Movement)	Cell therapy	Novel		Phase 1 Phase 2	NCT01860794	Evaluation of Safety and Tolerability of Fetal Mesencephalic Dopamine Neuronal Precursor Cells for Parkinson's Disease	Bundang CHA Hospital	15	May 2013	Apr 2022	8.9
IPT803	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1 Phase 2	NCT03407378	A Study to Investigate a New Treatment in Patients With Parkinson's Disease	Tools4Patient	110	Jun 2018	Feb 2020	1.6
Mesenchymal Stem Cells	DMT	cell therapy	Novel		Phase 1 Phase 2	NCT03684122	Use of Mesenchymal Stem Cells (MSCs) Differentiated Into Neural Stem Cells (NSCs) in People With Parkinson's (PD).	University of Jordan	10	Jun 2018	Mar 2020	1.8
Neural Precursor Cell transplantation	ST (Movement)	cell therapy	Novel		Phase 1 Phase 2	NCT03119636	Safety and Efficacy Study of Human ESC-derived Neural Precursor Cells in the Treatment of Parkinson's Disease	Chinese Academy of Sciences The First Affiliated Hospital of Zhengzhou University	50	May 2017	Dec 2020	3.6
Neural Stem Cell-Derived Neurons	ST (Movement)	cell therapy	Novel		Phase 1 Phase 2	NCT03309514	Transplantation of Neural Stem Cell-Derived Neurons for Parkinson's Disease	NeuroGeneration	12	Jun 2020	nau	1.1
OXB-102 (AXO-Lenti-PD)	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1 Phase 2	NCT03720418	Study of OXB-102 (AXO-Lenti-PD) in Patients With Bilateral, Idiopathic Parkinson's Disease	Axovant Sciences Ltd. Oxford BioMedica	30	Oct 2018	Dec 2031	13.1
PR001A	DMT	GBA	Novel		Phase 1 Phase 2	NCT04127578	Phase 1/2a Clinical Trial of PR001A in Patients With Parkinson's Disease With at Least One GBA1 Mutation (PROPEL)	Prevail Therapeutics	16	Oct 2019	Aug 2026	6.8
ProSavin	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 1 Phase 2	NCT01856439	Long Term Safety and Efficacy Study of ProSavin in Parkinson's Disease	Axovant Sciences Ltd. Oxford BioMedica	15	May 2011	May 2022	11.0
Rifaximin	DMT	Microbiome/GIT	Repurposed	Antibiotic	Phase 1 Phase 2	NCT03575195	Microbiota Intervention to Change the Response of Parkinson's Disease	University of California, San Francisco Nova Southeastern University Gateway Institute for Brain Research	86	Jul 2019	Dec 2020	1.4
Rifaximin	DMT	Microbiome/GIT	Repurposed	Antibiotic	Phase 1 Phase 2	NCT03958708	Modulation of Gut Microbiota by Rifaximin in PD Patients	Taipei Medical University Shuang Ho Hospital	20	May 2019	Dec 2020	1.6

Ropinirole	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 1 Phase 2	NCT03250117	Relative Bioavailability Study of Ropinirole Implants in Parkinson's Patients on L-Dopa Switched From Oral Ropinirole	Titan Pharmaceuticals	20	Oct 2017	Jul 2020	2.7
Terazosin	DMT	Other	Repurposed	Hypertension/BPH	Phase 1 Phase 2	NCT03905811	Terazosin for Parkinson's Disease	Jordan Schultz University of Iowa	20	Sep 2019	Jan 2020	0.3
Accordion Pill C-D	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 2	NCT03576638	Study to Assess Pharmacokinetics of Accordion Pill Carbidopa-Levodopa Compared to Immediate Release Carbidopa-Levodopa in Parkinson's Disease Patients	Intec Pharma Ltd.	12	Jul 2018	Jan 2019	0.5
Ambroxol	DMT	GBA	Repurposed	Respiratory diseases	Phase 2	NCT02914366	Ambroxol as a Treatment for Parkinson's Disease Dementia	Lawson Health Research Institute Weston Brain Institute University of Western Ontario, Canada London Health Sciences Centre	75	Nov 2015	Dec 2021	6.1
Ambroxol	DMT	GBA	Repurposed	Respiratory diseases	Phase 2	NCT02941822	Ambroxol in Disease Modification in Parkinson Disease	University College, London Cure Parkinson's Trust PRO.MED.CS Praha a.s - Czech Republic	20	Dec 2016	Apr 2018	1.3
ANAVEX2-73	DMT	Other	Novel		Phase 2	NCT03774459	ANAVEX2-73 Study in Parkinson's Disease Dementia	Anavex Life Sciences Corp. Anavex Germany GmbH	120	Jul 2018	Jul 2020	2.1
Autologous Mesenchymal stem cells	DMT	Cell therapy	Novel		Phase 2	NCT04146519	Parkinson's Disease Therapy Using Cell Technology	Belarusian Medical Academy of Post-Graduate Education	12	Jul 2017	Dec 2019	2.5
AV-101 (L-4-chlorokynurenine)	ST (LID)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT04147949	AV-101 (L-4-chlorokynurenine) in Parkinson's Disease Subjects With Levodopa-Induced Dyskinesia	VistaGen Therapeutics, Inc.	20	Dec 2020	Apr 2022	1.3
BIIB054 (Cinpanemab)	DMT	Immunotherapy	Novel		Phase 2	NCT03318523	Evaluating the Safety, Pharmacokinetics, and Pharmacodynamics of BIIB054 in Participants With Parkinson's Disease	Biogen	311	Jan 2018	Jun 2021	3.4
BoNT-A (Botulinum Toxin-A / Botox)	ST (Tremor)	Non-dopaminergic symptom relief	Repurposed	Neurotoxin used for pain management	Phase 2	NCT02427646	Kinematic-guided BoNT-A Treatment for ET and PD Tremor	Western University, Canada	54	Oct 2011	Jun 2020	8.7
BoNT-A (Botulinum Toxin-A / Botox)	ST (Tremor)	Non-dopaminergic symptom relief	Repurposed	Neurotoxin used for pain management	Phase 2	NCT02668497	Kinematic-based BoNT-A Bilateral Upper Limb PD Therapy	Western University, Canada	50	Mar 2016	Feb 2021	4.9
Bumetanide	ST (Movement)	Non-dopaminergic symptom relief	Repurposed	Diuretic	Phase 2	NCT03899324	Evaluation of the Efficacy and Safety of Bumetanide in Parkinson's Disease	B&A Therapeutics	40	Apr 2019	Aug 2021	2.3
Cannabidiol (CBD)	ST (Movement)	Non-dopaminergic symptom relief	Repurposed	Epilepsy	Phase 2	NCT03582137	A Study of Tolerability and Efficacy of Cannabidiol on Motor Symptoms in Parkinson's Disease	University of Colorado, Denver Colorado Department of Public Health and Environment	75	Sep 2018	Jun 2021	2.7
Cannabis	ST (Pain)	Non-dopaminergic symptom relief	Repurposed	MS spasticity	Phase 2	NCT03944447	Outcomes Mandate National Integration With Cannabis as Medicine	OMNI Medical Services, LLC	100000	Dec 2018	Dec 2025	7.1
CanniMed (Cannabis Oil)	ST (Pain)	Non-dopaminergic symptom relief	Repurposed	Pain relief	Phase 2	NCT03639064	Cannabis Oil for Pain in Parkinson's Disease	University Health Network, Toronto Parkinson Society Canada	15	Dec 2018	Jul 2020	1.6
Carvedilol	DMT	Other	Repurposed	Hypertension	Phase 2	NCT03775096	Adrenergic Blockers for Cardiac Changes in Early Parkinson's Disease	Michele Tagliati, MD Cedars-Sinai Medical Center	15	Apr 2019	Dec 2019	0.7
Carvedilol	DMT	Other	Repurposed	Hypertension	Phase 2	NCT04218968	Cardiac Changes in Early Parkinson's Disease: A Follow up Study	Cedars-Sinai Medical Center	15	Dec 2019	Dec 2022	3.0
Ceftriaxone	DMT	Other	Repurposed	Antibiotic	Phase 2	NCT03413384	To Assess the Efficacy and Safety of Ceftriaxone in Patients With Mild to Moderate Parkinson's Disease Dementia	BrainX Corporation	106	Feb 2019	Dec 2020	1.9

Clonidine	ST (ICD)	Non-dopaminergic symptom relief	Repurposed	Hypertension	Phase 2	NCT03552068	Study of Clonidine Efficacy for the Treatment of Impulse Control Disorders in Parkinson's Disease:	Hospices Civils de Lyon	38	May 2019	May 2022	3.0
CNM_Au8 (Gold Nanocrystals)	DMT	Energy and mitochondria	Novel		Phase 2	NCT03815916	31P-MRS Imaging to Assess the Effects of CNM-Au8 on Impaired Neuronal Redox State in Parkinson's Disease	Clene Nanomedicine University of Texas Southwestern Medical Center	24	Jul 2019	Jul 2020	1.0
CTC-413	ST (Movement)	dopaminergic symptom relief	Reformulation		Phase 2	NCT03683225	A Study to Evaluate in Patients With Parkinsonian Type Disorders	Chase Therapeutics Corporation	24	Apr 2019	Mar 2020	0.9
CVN424	ST (Movement)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT04191577	Study of CVN424 in Parkinson's Disease Patients With Motor Fluctuations	Cerevance Beta, Inc.	66	Dec 2019	Aug 2020	0.7
CX-8998	ST (Tremor)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT03436953	A Phase 2 Study of CX-8998 in Adults With Tremor Associated With Parkinson's Disease	Jazz Pharmaceuticals	60	Dec 2019	Dec 2020	1.0
DA-9805	DMT	Botanical	Novel		Phase 2	NCT03189563	Safety and Efficacy of DA-9805 for Parkinson's Disease	Dong-A ST Co., Ltd.	60	Feb 2018	Mar 2019	1.1
Deferiprone	DMT	Antioxidant	Repurposed	Iron reduction	Phase 2	NCT02655315	Conservative Iron Chelation as a Disease-modifying Strategy in Parkinson's Disease	University Hospital, Lille European Commission ApoPharma	338	Feb 2016	Feb 2021	5.0
Donepezil	DMT	Other	Repurposed	Alzheimer's disease	Phase 2	NCT02450786	Effect of Donepezil on Cognition in Parkinson's Disease With Mild Cognitive Impairment (PD-MCI)	Yonsei University	80	Jun 2015	Aug 2019	4.2
Droxidopa	ST (Fatigue)	Non-dopaminergic symptom relief	New Claim		Phase 2	NCT03446807	Safety and Efficacy of Droxidopa for Fatigue in Patients With Parkinsonism	Loma Linda University H. Lundbeck A/S	32	Jan 2020	Jan 2021	1.0
Droxidopa	ST (nOH)	Non-dopaminergic symptom relief	New Claim		Phase 2	NCT03567447	Effect of L-Dihydroxyphenylserine (L-DOPS) on Falls in Patients With Neurogenic Orthostatic Hypotension (NOH)	St. Joseph's Hospital and Medical Center, Phoenix H. Lundbeck A/S Arizona State University	10	Aug 2018	Mar 2020	1.5
Droxidopa	ST (Gait and balance)	Non-dopaminergic symptom relief	New Claim		Phase 2	NCT02812147	Effect of L-Dihydroxyphenylserine on Locomotion, Postural Stability, and Fall Risk Reduction in Parkinson Disease	St. Joseph's Hospital and Medical Center, Phoenix Arizona State University, Tempe	20	May 2016	Jun 2019	3.1
ENT-01 (Kenterin)	ST (Constipation)	Targeting aSN	Novel		Phase 2	NCT03781791	Orally Administered ENT-01 for Parkinson's Disease-Related Constipation (KARMET)	Enterin Inc.	152	Dec 2018	Oct 2020	1.8
EPI-589	DMT	Energy and mitochondria	Novel		Phase 2	NCT02462603	Safety and Biomarker Study of EPI-589 in Parkinson's Disease	Edison Pharmaceuticals Inc	44	Mar 2016	Dec 2019	3.8
Foliglurax (PXT002331)	ST (Movement)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT03162874	Study to Evaluate the Efficacy, Safety and Tolerability of PXT002331 (Foliglurax) in Reducing Motor Complications of Levodopa Therapy in Parkinson Disease's Patients	Prexton Therapeutics	165	Jul 2017	Oct 2019	2.2
Glycopyrrolate	ST (Sialorrhoea)	Non-dopaminergic symptom relief	Repurposed	Peptic ulcers	Phase 2	NCT02382198	Study of Glycopyrrolate for Moderate-to-severe Sialorrhoea in Parkinson's Disease	Ottawa Hospital Research Institute	28	Jul 2016	Dec 2018	2.4
GRF6021 JM-010 (Buspirone/Zolmitriptan)	DMT	Other	Novel		Phase 2	NCT03713957	A Study to Assess the Safety of GRF6021 Infusions in Subjects With Parkinson's Disease and Cognitive Impairment	Alkahest, Inc.  Michael J. Fox Foundation for Parkinson's Research	90	Nov 2018	Nov 2020	2.0
	ST (LID)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT03956979	A Study in Parkinson's Disease in paTients With mOderate to severe dyskinesia	Contera Pharma Bukwang Pharmaceutical	81	Jul 2019	Jun 2021	1.9
K0706 (SCC - 138)	DMT	Kinase inhibitor	Novel		Phase 2	NCT03655236	PROSEK: A Phase 2 Study In Early Parkinson's Disease Patients Evaluating The Safety And Efficacy Of Abl Tyrosine Kinase Inhibition Using K0706	Sun Pharma Advanced Research Company Limited	504	Feb 2019	Feb 2021	2.0
KDT-3594	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 2	NCT03845387	A Clinical Study of KDT-3594 in Patients With Early Parkinson's Disease.	Kissei Pharmaceutical Co., Ltd.	100	Feb 2019	Jun 2020	1.3

KW-6356	ST (Movement)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT03703570	A Study of KW-6356 in Patients With Parkinson's Disease on Treatment With Levodopa-containing Preparations	Kyowa Kirin Co., Ltd.	502	Sep 2018	May 2020	1.6
Liraglutide	DMT	GLP-1 agonist	Repurposed	Type 2 diabetes	Phase 2	NCT02953665	Safety and Efficacy of Liraglutide in Parkinson's Disease	Cedars-Sinai Medical Center The Cure Parkinson's Trust Novo Nordisk A/S	57	Apr 2017	Dec 2020	3.7
Lixisenatide	DMT	GLP-1 agonist	Repurposed	Type 2 diabetes	Phase 2	NCT03439943	Study to Evaluate the Effect of Lixisenatide in Patient With Parkinson's Disease	University Hospital, Toulouse Cure Parkinson RÃ©seau NS-Park EUCLID Sanofi	158	Jun 2018	Dec 2021	3.5
LY3154207	ST (PD dementia)	Dopaminergic symptom relief	Novel		Phase 2	NCT03305809	A Study of LY3154207 in Participants With Dementia Due to Lewy Body Dementia (LBD) Associated With Idiopathic Parkinson's Disease (PD) or Dementia With Lewy Bodies (DLB)	Eli Lilly and Company	340	Nov 2017	Jun 2020	2.6
Mannitol	DMT	Targeting aSN	Repurposed	Diuretic and artificial sweetener	Phase 2	NCT03823638	Safety, Tolerability and Effects of Mannitol in Parkinson's Disease	Hadassah Medical Organization	60	Nov 2018	Dec 2020	2.1
Metabolic Cofactor Supplementation	DMT	Other	Repurposed	Multiple supplements to enhance hepatic oxidation	Phase 2	NCT04044131	Metabolic Cofactor Supplementation in Alzheimer's Disease (AD) and Parkinson's Disease (PD) Patients	Istanbul Medipol University Hospital ScandiBio Therapeutics AB Alanya Alaaddin Keykubat University Sahlgrenska University Hospital, Sweden KTH Royal Institute of Technology	120	Sep 2019	Sep 2020	1.0
ND0612	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 2	NCT02726386	A Clinical Study in Advanced Parkinson's Disease Investigating the Long Term Safety of ND0612 Administered as a Continuous SC Infusion	NeuroDerm Ltd.	210	May 2016	Aug 2021	5.3
NLY01 (pegylated exenatide)	DMT	GLP-1 agonist	Novel		Phase 2	NCT04154072	A Clinical Study of NLY01 in Patient's With Early Parkinson's Disease	Neurally, Inc.	240	Jan 2020	Apr 2021	1.2
NYX-458	ST (PD MCI)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT04148391	A Study to Evaluate NYX-458 in Subjects With PD-MCI	Aptinyx CogState Ltd.  Worldwide Clinical Trials	135	Nov 2019	Jun 2021	1.6
Ondansetron	ST (Hallucinations)	Non-dopaminergic symptom relief	Repurposed	Nausea and vomiting (antiemetic)	Phase 2	NCT04167813	Trial of Ondansetron as a Parkinson's HALLucinations Treatment	University College, London MODEPHARMA Limited PARKINSONS UK PRIMENT SEALED ENVELOPE Waddell Packaging Ltd Custom Pharmaceuticals Limited	216	Apr 2020	Apr 2023	3.0
Pimavanserin	ST (Neuropsychiatric)	Non-dopaminergic symptom relief	New Claim		Phase 2	NCT04164758	Study to Evaluate Safety and Daytime Sedation in Subjects With Parkinson's Disease With Neuropsychiatric Symptoms Treated With Pimavanserin or Low-Dose Quetiapine	ACADIA Pharmaceuticals Inc.	60	Oct 2019	Dec 2020	1.1
Pimavanserin	ST (ICD)	Non-dopaminergic symptom relief	New Claim		Phase 2	NCT03947216	Randomized Placebo Controlled Trial Evaluating the Efficacy of Pimavanserin, a Selective Serotonin 5-Hydroxytryptamine-2A (5HT2A) Inverse Agonist, to Treat Impulse Control Disorders in Parkinson's Disease.	University Hospital, Strasbourg, France NS-PARK EUCLID F-CRIN	130	Sep 2019	Jan 2022	2.3
Prasinezumab (RO7046015/PRX002)	DMT	Immunotherapy	Novel		Phase 2	NCT03100149	A Study to Evaluate the Efficacy of Prasinezumab (RO7046015/PRX002) in Participants With Early Parkinson's Disease	Hoffmann-La Roche Prothena Biosciences Limited	316	Jun 2017	Feb 2021	3.6

Pridopidine	ST (LID)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT03922711	A Study to Assess the Safety and Effectiveness of Pridopidine Compared to Placebo in the Treatment of Levodopa-Induced Dyskinesia in Patients With	Prilenia	135	Mar 2019	Apr 2020	1.0
Rasagiline	DMT	Other	New Claim		Phase 2	NCT02789020	Image Parkinson's Disease Progression Study	University of Florida NINDS	116	Dec 2016	Dec 2020	4.0
Resistant maltodextrin	ST (NMS)	Microbiome/GIT	Repurposed	Constipation	Phase 2	NCT03667404	Resistant Maltodextrin for Gut Microbiome in Parkinson's Disease: Safety and Tolerability Study	Northwestern University University of Illinois at Chicago	30	Nov 2018	Jun 2020	1.6
Semaglutide	DMT	GLP-1 agonist	Repurposed	Type 2 diabetes	Phase 2	NCT03659682	GLP1R in Parkinson's Disease	Oslo University Hospital	120	Jan 2019	Dec 2024	6.0
SEP-363856	ST (PD psychosis)	Non-dopaminergic symptom relief	Novel		Phase 2	NCT02969369	A Study to Evaluate the Efficacy, Safety and Tolerability of SEP-363856 in Subjects With Parkinson's Disease Psychosis	Sunovion	36	Dec 2016	May 2020	3.3
Simvastatin	DMT	Other	Repurposed	Hypercholesterolemia	Phase 2	NCT02787590	Simvastatin as a Neuroprotective Treatment for Moderate Parkinson's Disease	University Hospital Plymouth NHS Trust University of Plymouth	235	Mar 2016	May 2020	4.1
SOJZ herbal mixtures	ST (NMS)	Botanical	Novel		Phase 2	NCT02616120	Effect of SOJZ Herbal Mixtures on Non-motor Symptoms of Parkinson's Disease	Dongzhimen Hospital, Beijing	240	Dec 2015	Dec 2019	4.0
THN102 (modafinil/flecainide)	ST (Sleepiness)	Non-dopaminergic symptom relief	Repurposed	Sleepiness/anti-arrhythmic	Phase 2	NCT03624920	Safety and Efficacy of THN102 in Patients With Parkinson's Disease and Excessive Daytime Sleepiness	Theranexus	71	Jul 2018	Feb 2020	1.6
UDCA (Ursodeoxycholic acid)	DMT	Energy and mitochondria	Repurposed	Gallstones & primary biliary cholangitis	Phase 2	NCT03840005	Trial of Ursodeoxycholic Acid (UDCA) for Parkinson's Disease: The "UP" Study	Sheffield Teaching Hospitals NHS Foundation Trust JP Moulton Charitable Foundation PRO.MED.CS Praha a.s. Clinical Trials Research Unit, University of Sheffield	30	Dec 2018	Sep 2020	1.7
Venglustat (GZ/SAR402671)	DMT	GBA	Novel		Phase 2	NCT02906020	A Global Study to Assess the Drug Dynamics, Efficacy, and Safety of GZ/SAR402671 in Parkinson's Disease Patients Carrying a Glucocerebrosidase (GBA) Gene Mutation	Genzyme, a Sanofi Company Sanofi	270	Dec 2016	Feb 2023	6.1
VY-AADC02	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 2	NCT03562494	VY-AADC02 for Parkinson's Disease With Motor Fluctuations	Neurocrine Biosciences Voyager Therapeutics	42	Jun 2018	Dec 2020	2.4
WIN-1001X	DMT	Botanical	Novel		Phase 2	NCT04220762	A Study to Determine the Dose of WIN-1001X by Evaluating Efficacy and Safety in Early Parkinson's Disease Patients	Medi Help Line	188	Jan 2020	Dec 2020	0.9
Zolpidem	ST (Movement)	Non-dopaminergic symptom relief	Repurposed	Sleep	Phase 2	NCT03621046	Use of Low-dose Zolpidem in Parkinson's Disease	Aston University University Hospital Birmingham NHS Foundation Trust	28	Aug 2018	Jan 2020	1.4
Ecologic BARRIER849 (Probiotic)	ST (Anxiety)	Microbiome/GIT	Repurposed	Promotes gut health	Phase 2 Phase 3	NCT03968133	Treating Anxiety in Parkinson's Disease With a Multi-strain Probiotic	University of British Columbia The W. Garfield Weston Foundation	72	Sep 2019	Dec 2020	1.3
Fecal microbial transplantation	DMT	Microbiome/GIT	Novel		Phase 2 Phase 3	NCT03876327	Fecal Microbiota Transplantation As a Potential Treatment for Parkinson's Disease	Soroka University Medical Center	100	Aug 2015	Dec 2019	4.4
Hydrogen	DMT	Antioxidant	Novel		Phase 2 Phase 3	NCT03971617	Clinical Trial to Evaluate the Safety and Tolerability of Hydrogen in Patients With Parkinson's Disease	Stony Brook University	70	May 2019	Jul 2022	3.1

Idebenone	DMT	Other	Repurposed	Alzheimer's	Phase 2 Phase 3	NCT04152655	A Study of Efficacy and Safety of Idebenone vs. Placebo in Prodromal Parkinson Disease	Second Affiliated Hospital, School of Medicine, Zhejiang University	180	Jan 2020	Jan 2023	3.0
PR Oxycodone & Levodopa	ST (Pain)	Non-dopaminergic symptom relief	Repurposed	Pain relief	Phase 2 Phase 3	NCT02601586	Effects of PR Oxycodone and of Levodopa, vs Placebo, on Central Neuropathic Pain in Parkinson's Disease	University Hospital, Toulouse	84	Sep 2016	Sep 2021	5.0
ABBV-951	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 3	NCT03781167	A Study to Evaluate the Safety and Tolerability of ABBV-951 in Subjects With Parkinson's Disease (PD)	AbbVie	130	Apr 2019	Mar 2021	1.8
Accordion Pill	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT02605434	A Study to Assess the Safety and Efficacy of the of the Gastric-retentive AP-CD/LD in Advanced Parkinson's Patients	Intec Pharma Ltd.	420	Mar 2016	Dec 2019	3.8
Amprelosetine (TD-9855)	ST (nOH)	Non-dopaminergic symptom relief	Novel		Phase 3	NCT03750552	Clinical Effect of Amprelosetine (TD-9855) for Treating snOH in Subjects With Primary Autonomic Failure	Theravance Biopharma	188	Jan 2019	Sep 2020	1.6
Amprelosetine (TD-9855)	ST (nOH)	Non-dopaminergic symptom relief	Novel		Phase 3	NCT03829657	Clinical Effect Durability of Amprelosetine (TD-9855) for Treating snOH in Subjects With Primary Autonomic Failure	Theravance Biopharma	258	Feb 2019	Feb 2021	1.9
Amprelosetine (TD-9855)	ST (nOH)	Non-dopaminergic symptom relief	Novel		Phase 3	NCT04095793	Extension Study of Amprelosetine (TD-9855) for Treating snOH in Subjects With Primary Autonomic Failure	Theravance Biopharma	80	Sep 2019	Mar 2025	5.5
APL-130277 (Sublingual apomorphine)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT02542696	An Open-Label Phase 3 Study to Examine the Long-Term Safety, Tolerability and Efficacy of APL-130277 for the Acute Treatment of "OFF" Episodes in Patients With Parkinson's Disease	Sunovion	226	Aug 2015	Mar 2023	7.5
APL-130277 (Sublingual apomorphine)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT03391882	A Study of an Investigational Drug to See How it Affects the People With Parkinson's Disease Complicated by Motor Fluctuations ("OFF" Episodes) Compared to an Approved Drug Used to Treat People With Parkinson's Disease Complicated by Motor Fluctuations ("OFF" Episodes)	Sunovion	106	Dec 2018	Oct 2020	1.8
Apomorphine (pump)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT02864004	Apomorphine Pump in Early Stage of Parkinson's Disease (EARLY-PUMP)	Rennes University Hospital	192	Mar 2017	Sep 2024	7.5
Apomorphine (subcutaneous infusion)	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT02339064	Infusion of Apomorphine: Long-term Safety Study	US WorldMeds LLC	99	Feb 2015	Sep 2021	6.6
Buspirone	ST (LID)	Non-dopaminergic symptom relief	Repurposed	Anti-anxiety	Phase 3	NCT02617017	Buspirone Treatment of Iatrogenic Dyskinesias in Advanced Parkinson's Disease	Assistance Publique - Hopitaux de Paris	100	Jun 2016	Jun 2018	2.0
Duodopa (ABT-SLV187)	ST (NMS)	Dopaminergic symptom relief	New Claim		Phase 3	NCT02549092	A Study to Examine the Effect of Levodopa-Carbidopa Intestinal Gel (LCIG) Therapy Relative to That of Optimized Medical Treatment (OMT) on Non-motor Symptoms (NMS) Associated With Advanced Parkinson's Disease (PD)	AbbVie	89	Sep 2015	May 2020	4.7
Exenatide	DMT	GLP-1 agonist	Repurposed	Type 2 diabetes	Phase 3	NCT04232969	Exenatide Once Weekly Over 2 Years as a Potential Disease Modifying Treatment for Parkinson's Disease	University College, London	200	Jan 2020	Sep 2023	3.7
IPX203	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT03877510	Open Label Extension (OLE) Study of the Safety and Clinical Utility of IPX203 in PD Patients With Motor Fluctuations	Impax Laboratories, LLC	300	Apr 2019	Mar 2021	2.0



IPX203	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT03670953	A Study to Evaluate the Safety and Efficacy of IPX203 in Parkinson's Disease Patients With Motor Fluctuations	Impax Laboratories, LLC	510	Nov 2018	Jul 2020	1.7
Levodopa-carbidopa intestinal gel	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT00660673	Open Label Continuation Treatment Study With Levodopa-Carbidopa Intestinal Gel in Advanced PD	AbbVie (prior sponsor, Abbott) Quintiles, Inc. AbbVie	262	Nov 2009	Nov 2020	11.0
Lingzhi (Ganoderma)	DMT	Botanical	Repurposed	Adjunct to cancer treatment	Phase 3	NCT03594656	Effects of Lingzhi on Disease Progression in Patients With Untreated Early Parkinson's Disease	Xuanwu Hospital, Beijing	288	Jul 2018	Dec 2020	2.5
Memantine	DMT	Targeting aSN	Repurposed	Alzheimer's	Phase 3	NCT03858270	Inhibition of $\beta$ -synuclein Cell-cell Transmission by NMDAR Blocker, Memantine	Wayne State University	50	Mar 2019	Jun 2023	4.3
Nabilone	ST (NMS)	Non-dopaminergic symptom relief	Repurposed	Nausea and vomiting (antiemetic)	Phase 3	NCT03773796	Nabilone for Non-motor Symptoms in Parkinson's Disease	Medical University Innsbruck	48	Aug 2018	Dec 2020	2.3
N-acetylcysteine (NAC)	ST (ICD)	Non-dopaminergic symptom relief	Repurposed	Paracetamol/acetaminophen overdose	Phase 3	NCT03146130	Study of the Efficacy of N-acetylcysteine (NAC) on Impulse Control Disorders	Centre Hospitalier Universitaire, Amiens	70	Jul 2018	Dec 2019	1.5
ND0612	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT04006210	A Clinical Trial Investigating the Efficacy, Safety and Tolerability of Continuous Subcutaneous ND0612 Infusion in Comparison to Oral IR-LD/CD in Subjects With Parkinson's Disease Experiencing Motor Fluctuations (BouNDless).	NeuroDerm Ltd.	300	Aug 2019	Apr 2021	1.7
Nortriptyline & Escitalopram	ST (Depression)	Non-dopaminergic symptom relief	Repurposed	Depression	Phase 3	NCT03652870	Antidepressants Trial in Parkinson's Disease	University College, London London North West Healthcare NHS Trust King's College London University Hospital Plymouth NHS Trust NHS Lothian	408	Nov 2019	Dec 2022	3.1
P2B001	ST (Movement)	Dopaminergic symptom relief	Reformulation		Phase 3	NCT03329508	A Phase 3 Study With P2B001 in Subjects With Early Parkinson's	Pharma Two B Ltd.	525	Jan 2018	Sep 2020	2.7
Rivastigmine	ST (Gait and balance)	Non-dopaminergic symptom relief	Repurposed	Alzheimer's	Phase 3	NCT04226248	CHIEF PD (Cholinesterase Inhibitor to prEvent Falls in Parkinson's Disease)	University of Bristol Royal United Hospitals Bath NHS Foundation Trust	600	Jan 2020	Nov 2022	2.9
Safinamide	ST (Movement)	Dopaminergic symptom relief	New Claim		Phase 3	NCT03881371	A Study to Evaluate the Efficacy and Safety of Safinamide, as add-on Therapy, in Idiopathic Chinese Parkinson's Disease (PD) Patients With Motor Fluctuations Treated With Stable Doses of Levodopa	Zambon SpA	306	Aug 2019	Dec 2020	1.3
Safinamide	ST (LID)	Dopaminergic symptom relief	New Claim		Phase 3	NCT03987750	Safinamide for Levodopa-induced Dyskinesia (PD-LID)	Zambon SpA	300	Oct 2019	May 2021	1.6
Solifenacin	ST (Urinary)	Non-dopaminergic symptom relief	Reformulation		Phase 3	NCT03149809	Behavioral or Solifenacin Therapy for Urinary Symptoms in Parkinson Disease	VA Office of Research and Development	90	Mar 2018	Dec 2021	3.8
Tavapadon (PF-06649751)	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 3	NCT04201093	Fixed-Dose Trial in Early Parkinson's Disease (PD)	Cerevel Therapeutics, LLC	522	Dec 2019	Oct 2022	2.9
Tavapadon (PF-06649751)	ST (Movement)	Dopaminergic symptom relief	Novel		Phase 3	NCT04223193	Flexible-Dose Trial in Early Parkinson's Disease (PD)	Cerevel Therapeutics, LLC	296	Jan 2020	Nov 2022	2.9

**Symptom Abbreviations**

ICD = Impulse control disorders; LID = Levodopa-induced dyskinesia; MCI = Mild cognitive impairment; NMS = Non-motor symptoms; nOH = Neurogenic orthostatic hypotension