Neuro2022 @ Okinawa

Japanese Brain Bank Network for Neuroscience Research

Specially Appointed Professor,
Brain Bank for Neurodevelopmental, Neurological and Psychiatric Disorders,
United Graduate School of Child Development,
Osaka University
Specially Appointed Researcher
The Brain Bank for Aging Research
Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology (Cross Appointment)

Shigeo Murayama M.D. Ph.D.

I will talk about Japan Brain Bank Network. I am working with two brain bank system in Japan.

My Background

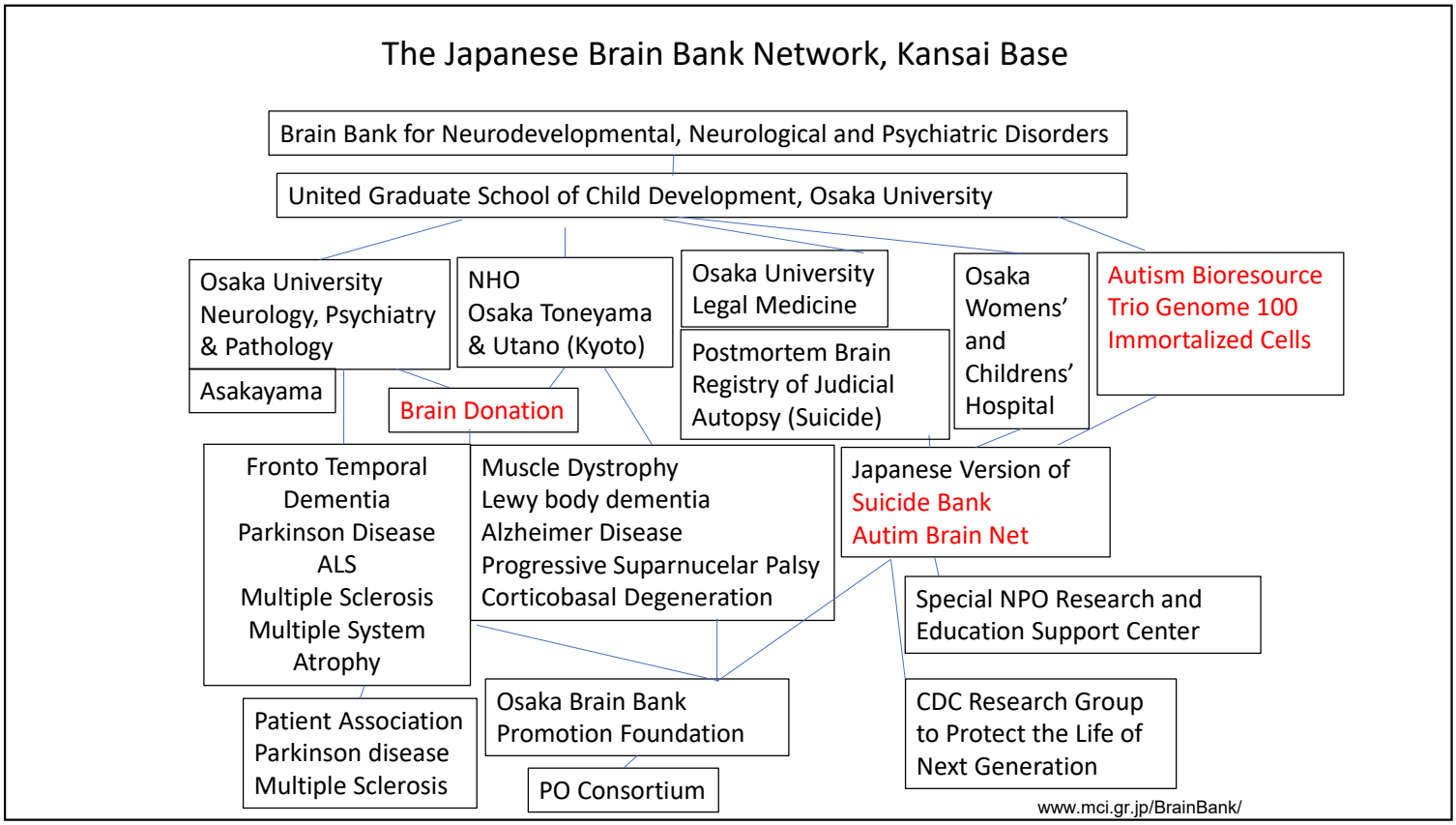
- I am a Zen master of Soto School.
- I have been educated that those who have eaten food offered to Buddha should dedicate their life to all living creatures on earth.
- To establish all Japan Brain Bank Network is my life work, which I interpret to be Bodhisattva line.
- I will go anywhere to fulfill brain donors' will or guide doctors who want to contribute to brain banking.

My background is a budhist priest and feels sincere respect for people in India.

COI

None for PO
Academic Society
Vice President: International Society of Neuropathology
Honorable Member: *the Japanese Societies of Neurology, Neuropathology and Dementia Research*
Associate Editor, Journal of Neuropathology and Experimental Neurology, the official journal of *American Association of Neuropathologists*
Visiting Professor: *Tokushima, Hiroshima, Tottori, Tokyo Medical, Doshisha and Osaka City Universities*;
Neuropathology Consultant: *National Center for Global Medicine, National Hospital Organization, Tokyo, Shimoshizu, Shizuoka Epilepsy and Neurology, West Hiroshima and Okinawa Hospitals; Kagawa University; Kameda, Yokohama Rosai, Toranomon, NTT East Kanto and Chikamori Hospitals*

My COI is as follows. I will go anywhere to fulfill the will of brain donation.



Japanese Brain Bank Network, Kansai Base was established in 2020 in collaboration with Osaka University, National Hospital Organization (NHO) and Osaka Prefectural Hospital Organization.

United Graduate School of Child Development, Osaka University

10/20./2021

Support Book for neurodevelopmental disorders

達成！

第1目標
500万円

サポートブック作成・送付
子どものバイオリソース・
データ活用システムの構築

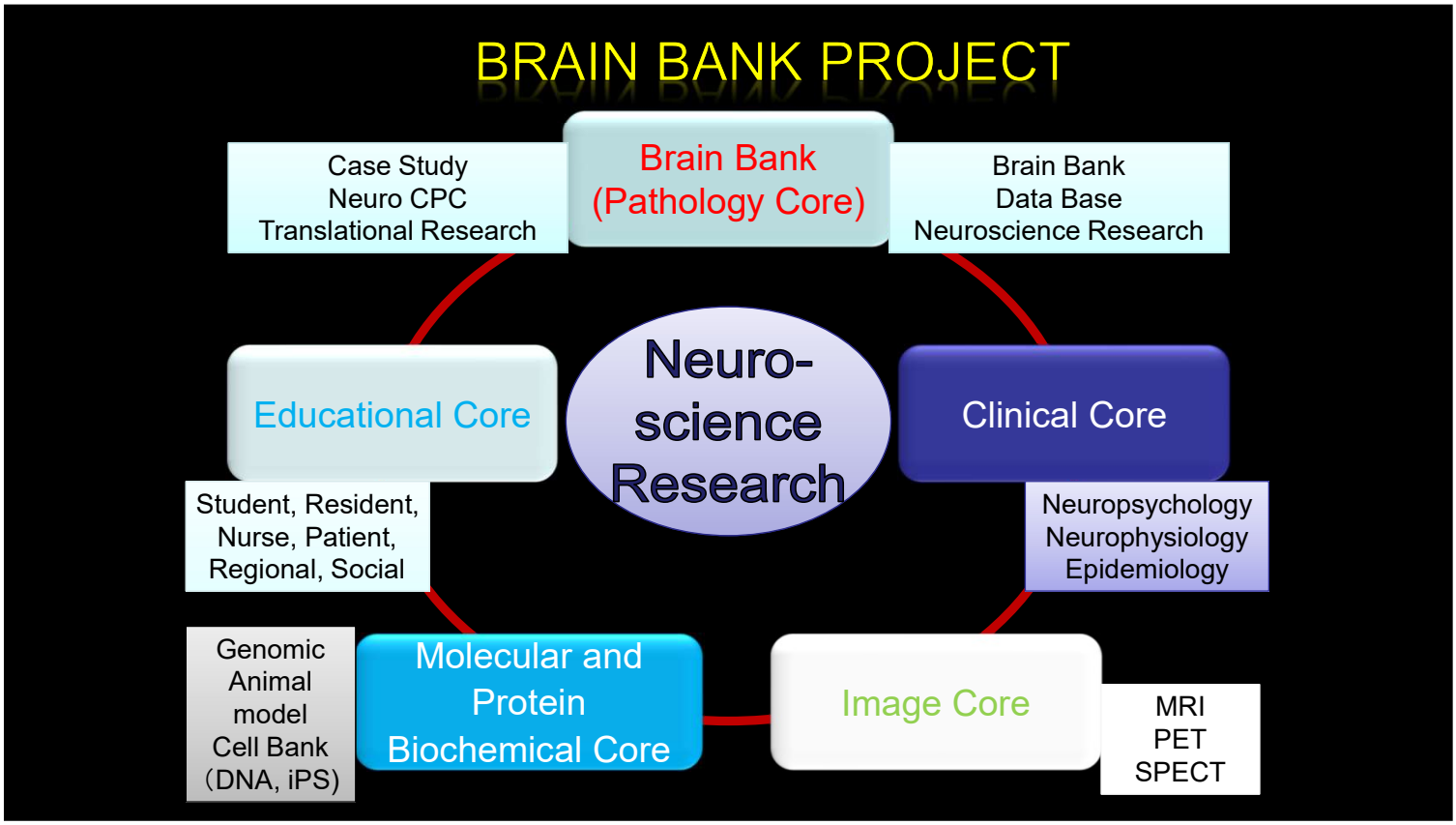
第2目標
1000万円

サポートブック作成・送付
神経難病のバイオリソース・
データ活用システムの構築

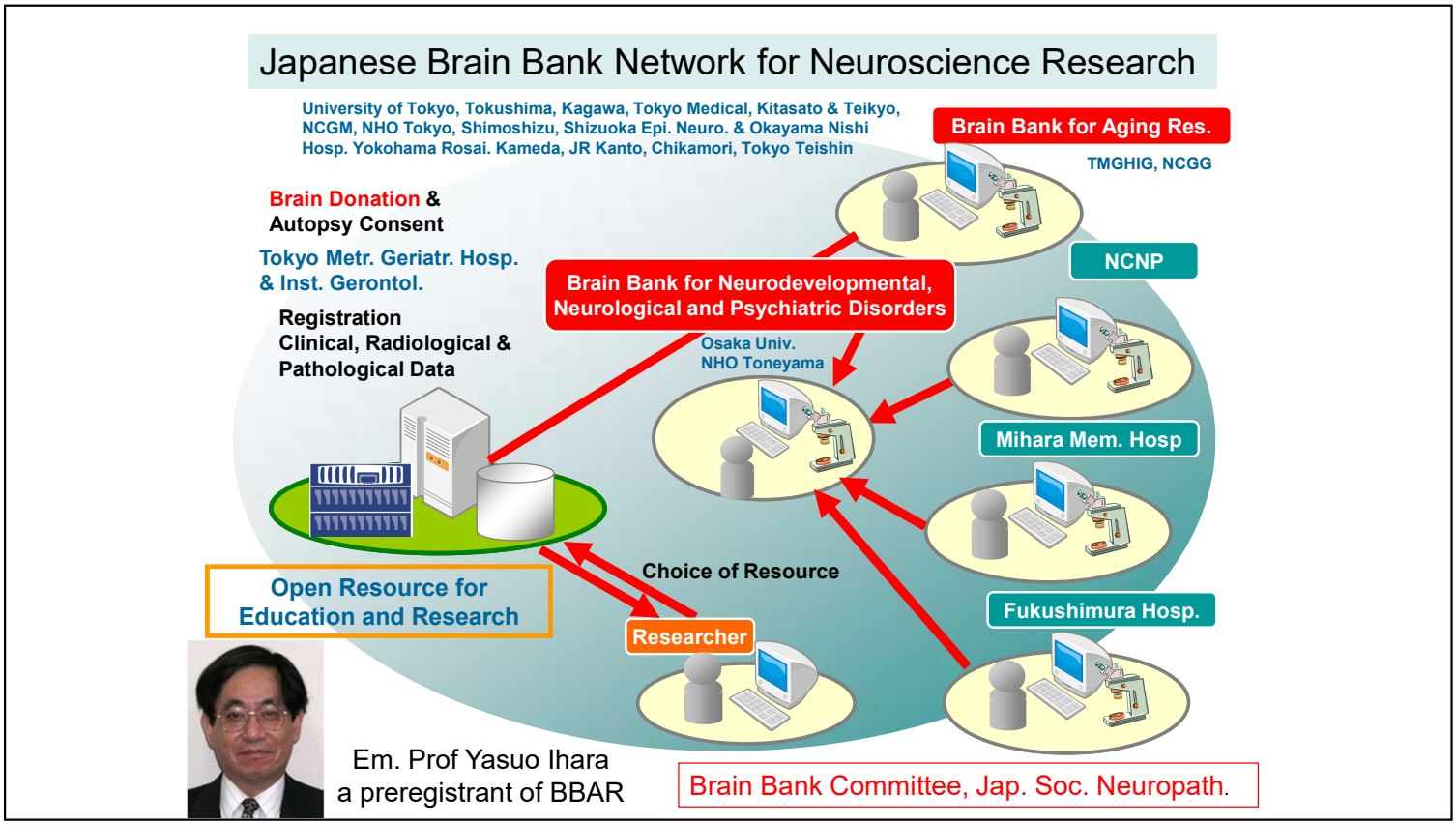
最終額
11,083,000円

Brain Bank for Intractable Neurological Disorders

連合小児でクラウドファンディングにより、データベース構築、ついでバイオリソース構築を訴え、目標を達成することが出来ました。寄附して下さった方々には感謝します。



The BBAR follows the framework of Alzheimer Disease Research Coordinating Center in US.



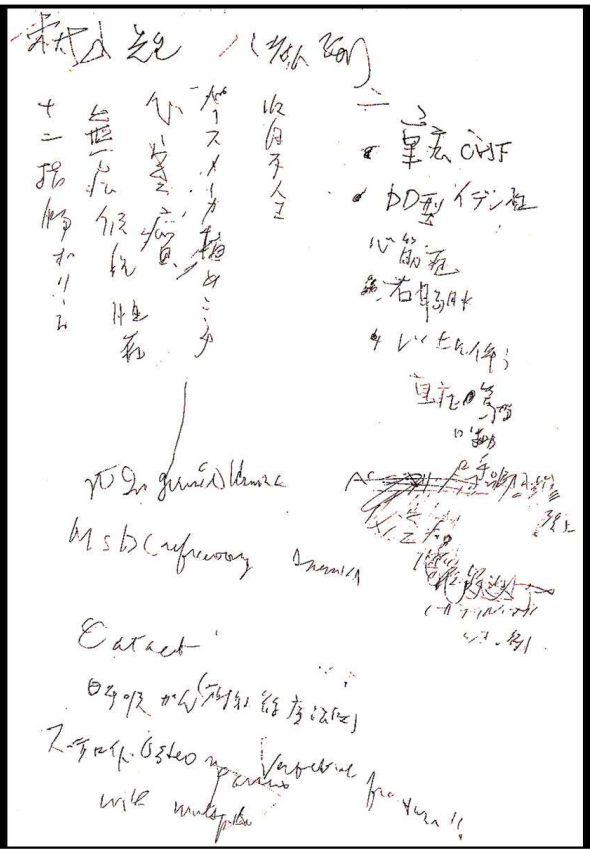
BBNNPD and BBAR form the core of the Japanese Brain Bank Network for Neuroscience Research, funded by MEXT, collaborating with the National Center of Neurology and Psychiatry (NCNP), Mihara Memorial Hospital and Fukushimura Hospital. Dr. Yasuo Ihara, a preregistered brain donor for BBAR and Emeritus Professor, the University of Tokyo, has been contributing to this frame from the beginning.

Brain Donation Program

Dr. Yasuo Toyokura
80y.o. +
Em. Pro. Univ. Tokyo
Em. Direc. TMGHIG
The first brain donor of BBAR

Death Note:
“Please use our body to conquer diseases that will kill me (and you cannot cure) .”

Donor Card



Dr. Toyokura, the Late Emeritus Professor the University of Tokyo and Emeritus President of TMGHIG was the founder of our brain donation program.

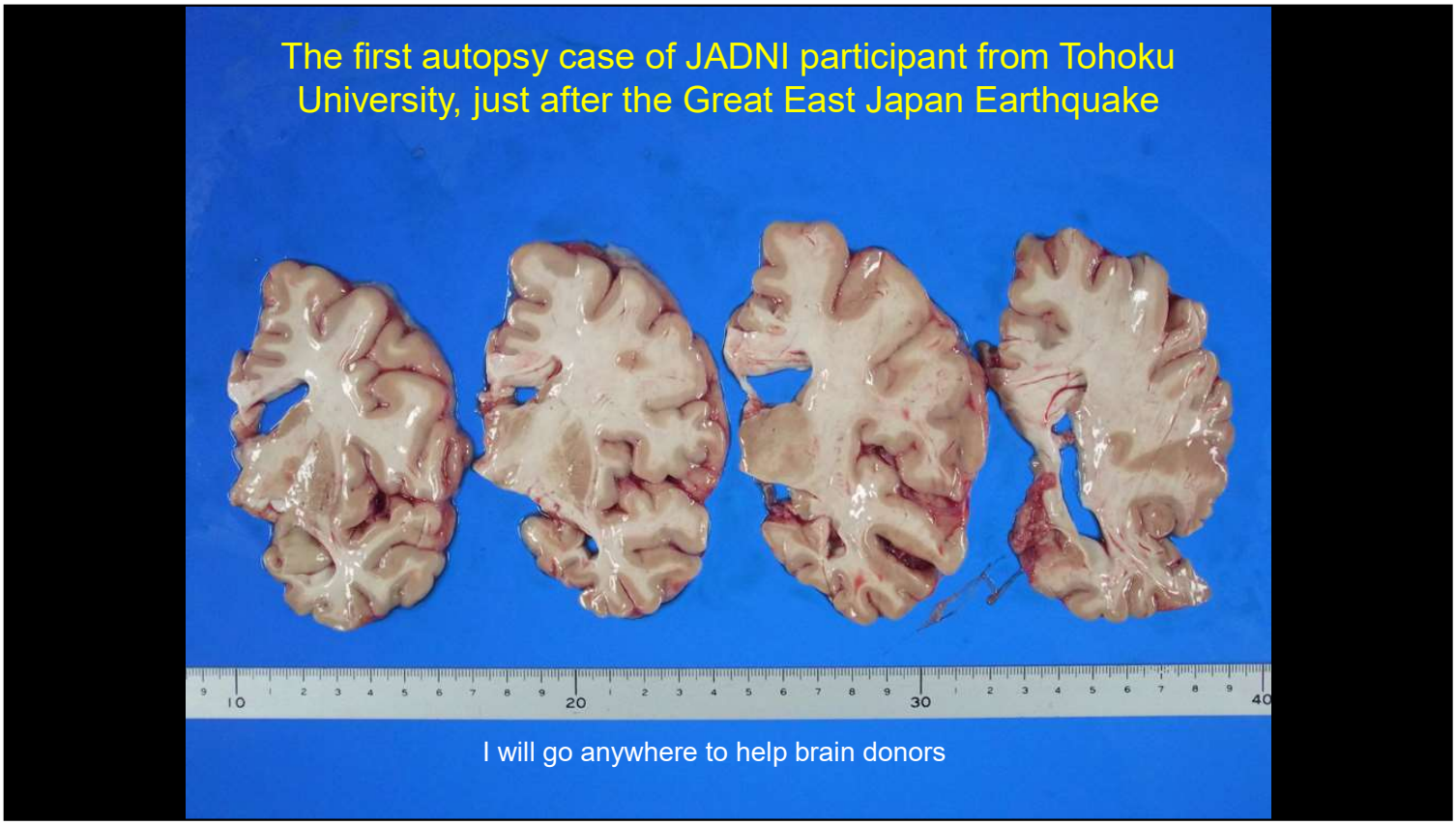
“Please use my body to cure the incurable diseases that will kill me.” He suffered from cardiomyopathy with a mutation of myosin light chain and died at age of 80 years.

Our movement of brain banking has been supported by MEXT. 7 years ago, wheen special resicerch field of neuroscience was terminated, we were accused that compraed with cancer and life- style- related disorders, how little is the contribution of neuroscience. I explained brain donation and banking for future cure and persuaded cohort health check resource and cancer registry that brain banking should also be included and we succeeded. This year, second round of six years was approved.

The Brain Bank Network

Institute	Clinician/ Pathologist	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Osaka Univ.	Mochizuki, H./ Murayama, S.					3	4	6	6	5	14
BBAR	Iwata, A./ Saito, Y.	63	39	39	45	64	52	39	36	36	34
NCNP	Takahashi, Y./ Takao, M.	10	10	11	9	13	18	24	14	22	20
Mihara	Mihara, B./ Takao, M.	29	26	15	19	23	16	19	33	18	12
Fukushimura	Kaneda, D./ Hashizume, Y.	36	31	27	25	25	21	25	33	40	23
NHO Toneyama	Inoue, K.							18	16	12	11
Tokushima, U.	Izumi, Y./ Tsuneyama, K.	1	3	5	10	4	12	4	5	3	3
Univ. Tokyo	Kubota, A./ Ikemura, M.	28	23	22	25	26	15	17	18	21	18
NCGM	Arai, T./ Igari, T.	23	16	17	27	17	17	9	9	7	12
NHO Tokyo	Komiya, T./	5	5	2	4	3	0	1	1	1	0
NHO Shizuoka	Obi, T.	1	2	2	4	6	6	4	2	1	6
Yokohama Rosai	Imafuku, I/ Kakuta, Y.	1	6	6	8	8	4	4	4	2	1
Kameda	Ando, T/ Takeuchi, R.	12	10	6	9	12	10(2)	10(2)	10(2)	5(4)	6
Kitazato Y.	Nishiyama, K./ Ichinohe, M.	7	9	5	4	2	6	6	1	1	2
Mita IUHW	Iwata, N./ Aida, S.	2	3	2	0	2	1	1	2	0	(1)
Kagawa U.	Kamada, M./ Ueno, M.	2	4	3	1	1	1	2	1	0	0
Toranomon	Uesaka, Y./ Ito, S.		3	1	2	2	3	1	8	2	6
Teikyo, U.	Sonoo, M./ Uozaki, H.	3	2	2	0	4	0	4	2	0	1
Tokyo Teishin	Shiio, Y./ Kishida, Y.	5	2	2	3	5	3	0	3	3(2)	7
Tokyo Medical U.	Aizawa, H./ Kuroda, M.				1	0	0	1	0	1	1
NHO E. Hiroshima	Watanabe, C./Tachiyama, Y				3	4	4	2	4	0	0
Osaka City Univ.	Ito, Y./ Osawa, M.			1	1	1	1	0	1	0	0
NHO Sagamihara	Hasegawa, I./ Yagishita, S.					8	10	18	18	17	8
NHO Okinawa	Suwazono, S./ Atami, E.				1	2	2	4	2	0	0
Open Resource		140	109	100	110	156	155	168	171	163	157
Inst. Collection	(MEXT、AMED)	79	85	84	105	74	69	50	67	35	

We tried to increase open brain resource for neuroscience research, in collaboration with clinicians and pathologists.



I recovered the first JADNI participant autopsy from Tohoku University. The autopsy was done just after the Higashinippon Earthquake, and I went to Tohoku University to recover this brain.

JSNP Brain Bank Committee (1986-)

Chair: Murayama, S. (UO)

- Adachi, T. (Tottori U.)
- Beck, G. (Neu. Osaka U.)
- Furuta T (Pat. Saga U.)
- Ikeuchi, K. (Genome. Niigata U.)
- Izumi Y. (Neu. Tokushima U)
- Ito, K. (NP. Kyoto Pr. U.)
- Inoue, Y. (Ethis, IMSUT)
- Iritani, S. (Psy. Nagoya U.)
- Oshima, K.（Psy. Matsuzawa H.）
- Kato, T. (Psy, Riken)
- Kaneda, D. (Fukushimura H.)
- Kunii, Y. (Psy. Fukushima)
- Komori, T. (NP. TMNH)
- Kowa, H.（Neu. Kobe U.）
- Saito, Y. (NP. TMGHIG)
- Shimizu, H. (NP. Niigata U.)
- Takao, M. (Lab. NCNP)
- Tanigawa, K. (Pat. Hokkaido U.)
- Taniguchi, D.（Neu. Juntendo U.）
- Tokumaru, A. (Rad. TMGHIG)
- Nishida, N. (For. Toyama U.)
- Nishimura, H.（Pat. Kawasaki U.）
- Hasegawa, M. (Bio. Ch, TMIMR)
- Inoue, K.（Toneyama H.）
- Matsumoto, H. (For. Osaka U.)
- Miki, Y (NP. Hirosaki U.)
- Yamada, M. (NP, Shinshu U.)
- Yokota, O. (Psy, Okayama U.)
- Yoshida, M. (NP, Aichi M. U.)

The JSNP (Japanese Society of Neuropathology) Brain Bank Committee supports JBBN and JBBNNR for quality assurance of neuropathological diagnosis. The committee covers all areas of Japan.

Case Reports from BBNDNPD


NEUROPATHOLOGY

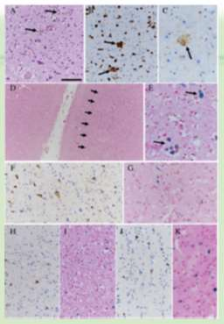
Neuropathology 2021 doi:10.1111/neup.12763

Case Report

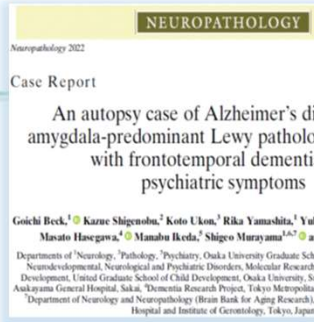
Amyotrophic lateral sclerosis with speech apraxia, predominant upper motor neuron signs, and prominent iron accumulation in the frontal operculum and precentral gyrus

Tomoki T. Mitani,[1] Goichi Beck,[1] Kansuke Kido,[2] Rika Yamashita,[1] Yuki Yonenobu,[1] Takuya Ogawa,[1] Chizu Saeki,[1] Tatsusada Okuno,[1] Seiichi Nagano,[1] Eiichi Morii,[2] Masato Hasegawa,[3] Yuko Saito,[4] Shigeo Murayama[1,4,5] and Hideki Mochizuki[1]

Departments of [1]Neurology, [2]Pathology, Osaka University Graduate School of Medicine, [3]Brain Bank for Neurodevelopmental, Neurological and Psychiatric Disorders, Molecular Research Center for Children's Mental Development, United Graduate School of Child Development, Osaka University, Suita, [4]Dementia Research Project, Tokyo Metropolitan Institute of Medical Science and [5]Department of Neurology and Neuropathology (Brain Bank for Aging Research), Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology, Tokyo, Japan



ALS Bank: Osaka Univ., Toneyama & BBAR


NEUROPATHOLOGY

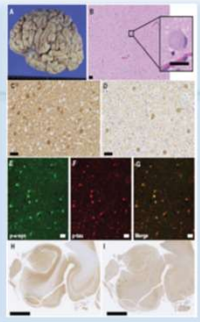
Neuropathology 2022 doi:10.1111/neup.12786

Case Report

An autopsy case of Alzheimer's disease with amygdala-predominant Lewy pathology presenting with frontotemporal dementia-like psychiatric symptoms

Goichi Beck,[1] Kazue Shigenobu,[2] Koto Ukon,[3] Rika Yamashita,[1] Yuki Yonenobu,[1] Eiichi Morii,[3] Masato Hasegawa,[4] Manabu Ikeda,[5] Shigeo Murayama[1,6,7] and Hideki Mochizuki[1]

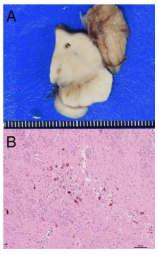
Departments of [1]Neurology, [2]Pathology, [3]Psychiatry, Osaka University Graduate School of Medicine, [4]Brain Bank for Neurodevelopmental, Neurological and Psychiatric Disorders, Molecular Research Center for Children's Mental Development, United Graduate School of Child Development, Osaka University, Suita, [5]Department of Psychiatry, Asakayama General Hospital, Sakai, [6]Dementia Research Project, Tokyo Metropolitan Institute of Medical Science and [7]Department of Neurology and Neuropathology (Brain Bank for Aging Research), Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology, Tokyo, Japan



Asakayama Hospital
FTLD Regisitry

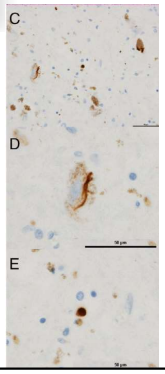
LETTERS: NEW OBSERVATION

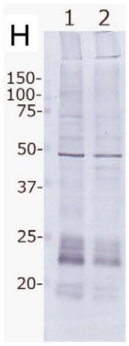
TDP-43 Proteinopathy Presenting with Typical Symptoms of Parkinson's Disease



National Hospital Oraganization
Osaka Toneyama Medical Center

The first autopsy case of pure sporadic TDP 43 proteinopathy type A with clinical diagnosis of Parkinson disease





pTDP-43(pS409/410)
1 anterior cingulate gyrus
2 substantia nigra

Movement Disorders 2022

Press Release, Asahi and NHK by Lec. Goichi Beck

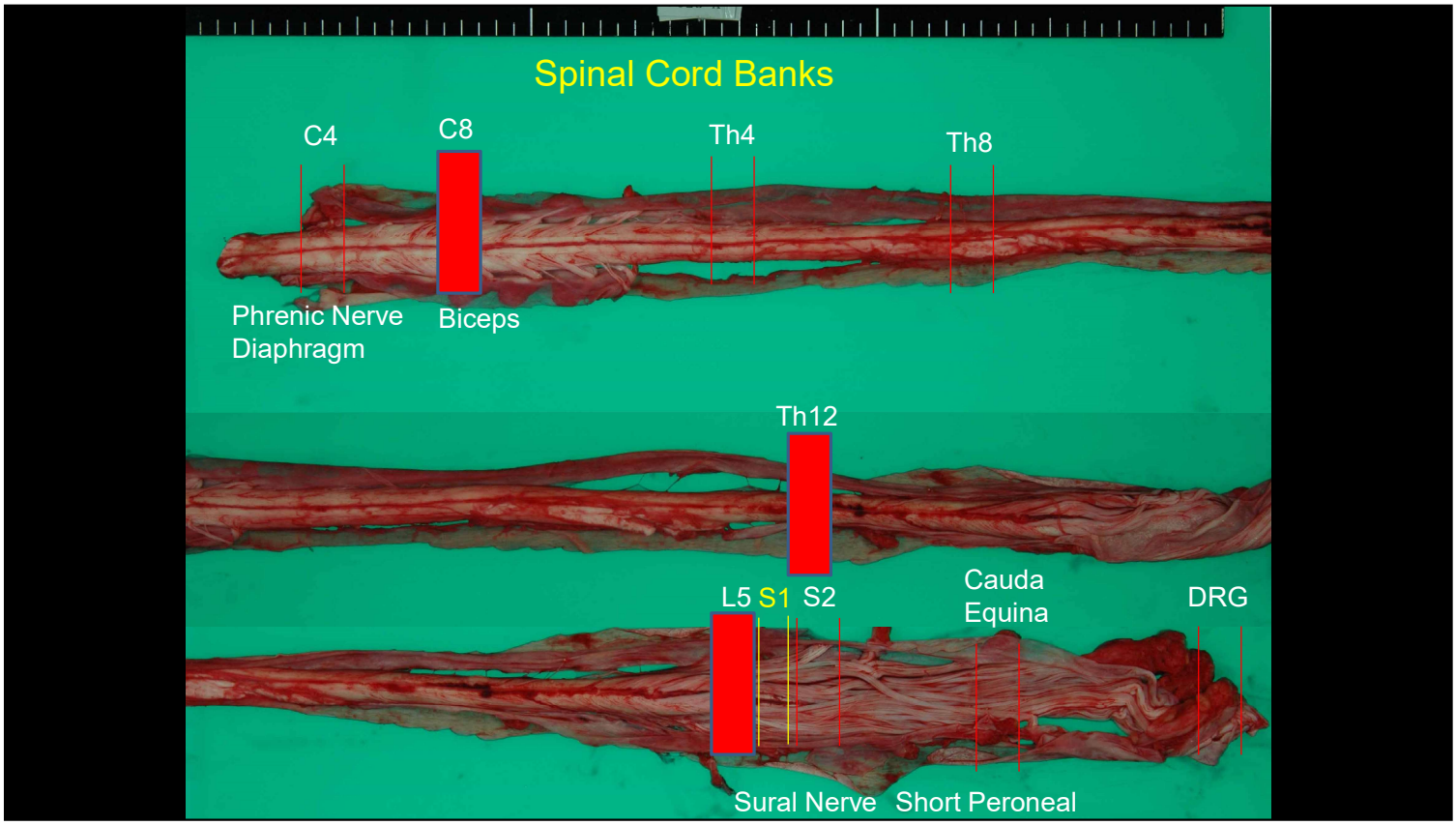
Higashihara M. 54 ALS/ MND Brain and Spinal Cord Resource (300 frozen control spinal cord) in 506 JaCALS registrants Matsubara,, T. ALS/MND Sym @Perth 2019

Westmead detecting upper motor neuron sigh for early diagnosis of ALS

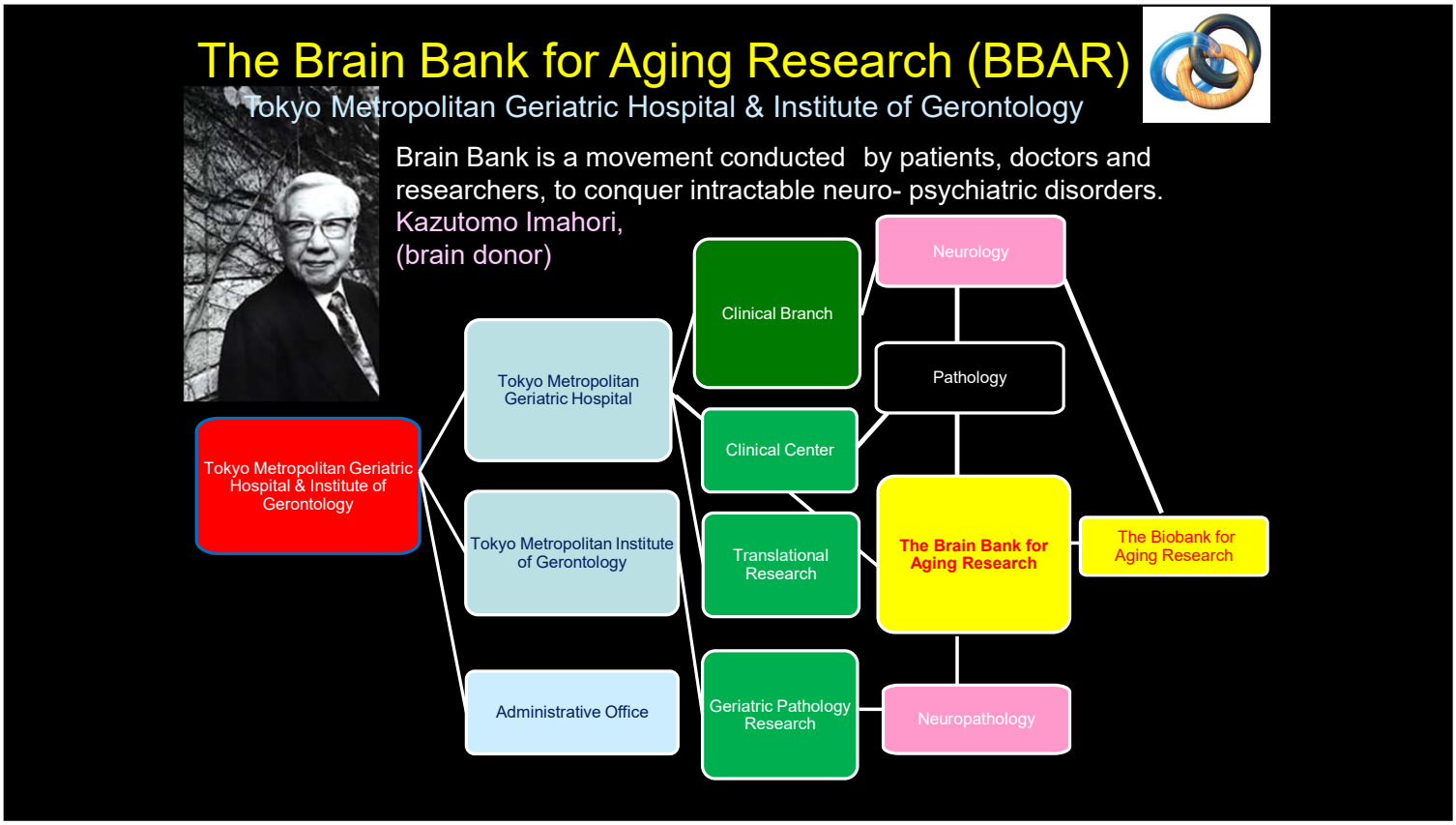
Index			Clinical data							Grade at first visit	
No	Clinical Diagnosis (First visit)	Clinical Diagnosis (Last visit)	Age at Death	Sex	Site of Onset	dementia	Duration from onset to diagnosis (month)	Duration from onset to TPPV (month)	Duration from onset to death (month)	Updated Awaji	rEEC
1	PMA	PMA	66	M	U	0	6	-	36	Not Applicable	Not Applicable
2	PMA	PMA	76	M	U	0	7	-	65	Not Applicable	Not Applicable
3	PMA	PMA	74	F	L	0	60	-	228	Not Applicable	Not Applicable
4	PMA	ALS-possible	84	M	U	0	5	-	37	Not Applicable	Not Applicable
5	PMA	ALS	70	M	U	1	10	-	35	Not Applicable	Not Applicable
6	ALS-possible	ALS-possible	68	M	T, U	0	3	-	9	Possible	Possible
7	ALS-possible	ALS-possible	82	M	B	0	16	-	26	Possible	Possible
8	ALS-possible	ALS-possible	64	M	B	0	3	-	30	Possible	Possible
9	ALS-possible + PD	ALS + PD	80	F	U	0	7	-	39	Possible	Possible
10	ALS-possible (UMN sign predominant)	ALS	61	F	B	0	7	-	38	Possible	Possible
11	ALS-possible (UMN sign predominant)	ALS	81	M	B	0	15	-	48	Possible	Possible
12	ALS-probable labolatory supported	ALS	86	M	U	0	11	-	14	Probable-laboratory-supported	Probable-laboratory-supported
13	ALS-probable labolatory supported	ALS	78	M	L	0	12	-	15	Probable-laboratory-supported	Probable-laboratory-supported
14	ALS-probable labolatory supported	ALS	59	M	L	0	13	-	65	Probable-laboratory-supported	Probable-laboratory-supported
15	ALS-probable + PSP	ALS + PSP	81	M	U	1	1	-	5	Probable	Probable
16	ALS-probable	ALS	76	M	B	0	6	-	7	Probable	Probable-laboratory-supported
17	ALS-probable	ALS	80	F	B	1	2	-	10	Probable	Probable
18	ALS-probable + PD	ALS +PD	68	M	U	0	6	-	13	Probable	Probable
19	ALS-probable	ALS	62	M	U	1	14	-	14	Probable	Probable
20	ALS-probable	ALS	67	M	L	0	4	-	14	Probable	Probable
21	ALS-probable	ALS	72	F	L	0	7	-	16	Probable	Probable
22	ALS-probable + PD	ALS + PD	69	F	U	0	3	-	17	Probable	Probable
23	ALS-probable	ALS	73	F	L	0	4	-	20	Probable	Probable
24	ALS-probable	ALS	55	F	B	1	4	-	37	Probable	Possible
25	ALS-probable	ALS	80	M	U	1	10	-	60	Probable	Probable
26	ALS-definite	ALS	73	M	L	1	7	-	8	Definite	Definite
27	ALS-definite	ALS	60	M	U	0	7	-	9	Definite	Definite
28	ALS-definite	ALS	77	F	B	1	9	-	12	Definite	Definite
29	ALS-definite	ALS	80	F	B	1	12	-	13	Definite	Definite
30	ALS-definite	ALS	80	F	B	1	10	-	17	Definite	Definite
31	ALS-definite	ALS	60	M	U	0	9	-	21	Definite	Definite
32	ALS-definite	ALS	75	M	B	0	7	-	22	Definite	Definite
33	ALS-definite	ALS	45	M	U	0	240	-	264	Definite	Definite
34	ALS-possible	ALS with TPPV	81	F	B	0	8	43	76	Possible	Possible
35	ALS-possible	ALS with TPPV	71	M	U	0	56	66	146	Possible	Possible
36	ALS-probable labolatory supported	ALS with TPPV	63	M	L	0	15	15	36	Probable-laboratory-supported	Probable-laboratory-supported
37	ALS-probable labolatory supported	ALS with TPPV	60	M	U	TLS	7	14	162	Probable-laboratory-supported	Probable-laboratory-supported
38	ALS-probable	ALS with TPPV	73	M	B	0	49	72	103	Probable	Possible
39	ALS-probable	ALS with TPPV	67	M	U	0	17	53	141	Probable	Probable-laboratory-supported
40	ALS-probable	ALS with TPPV	69	M	U	0	62	90	113	Probable	Probable
41	ALS-probable	ALS with TPPV	74	M	B	1	35	38	75	Probable	Probable
42	ALS-definite	ALS with TPPV	60	M	B	0	13	20	29	Definite	Definite
43	ALS-definite	ALS with TPPV	69	M	R	0	13	47	66	Definite	Definite
44	PLS	ALS	45	M	L	0	42	-	103	Possible	Possible
45	ALS with agenesis of corpus callosum	ALS with agenesis of corpus callosum	68	M	B	0	9	-	28	Probable	Probable
46	ALS12	ALS with TPPV	80	M	L	1	13	19	46	Not Applicable	Not Applicable
47	ALS1	ALS1	77	M	L	0	6	-	78	Not Applicable	Not Applicable

No	Neuronal loss/Degeneration						TDP-43 pathology											Other pathological data				
	PMC	pyramidal tract	Ⅻ	SC	BS	Nishihira-Takeuchi	PMC	Ⅻ	SC	IO	RF	RN	PF	Striatum	DG	Hp	EC	BraakSP Stage	BraakNFT Stage	Saito AGD Stage	BBAR Lewy Stage	Brain Weight (g)
1	1	2	2	3	2	1	2	3	5	2	3	0	0	0	0	0	0	0	1	0	0	1,150
2	1	1	3	3	2	1	2	4	5	2	4	1	0	0	0	0	0	0	1	0	0	1,400
3	1	3	2	3	Not Applicable	Not Applicable	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	1,100
4	1	1	2	2	2	1	2	3	4	1	3	NA	0	0	0	0	0	1	2	0	1	1,363
5	1	2	3	2	4	2B	4	5	5	4	4	5	5	6	5	2	6	0	1	0	0	1,330
6	1	2	1	2	2	1	3	4	5	2	4	2	0	1	0	0	0	0	1	0	0	1,410
7	1	2	3	2	4	2A	3	3	4	1	4	4	4	4	3	2	5	1	2	1	0	1,360
8	1	1	3	2	3	1	3	3	3	2	4	2	NA	3	0	0	0	1	1	0	0	1,450
9	3	3	2	3	3	1	4	1	4	3	3	3	0	3	0	0	0	0	1	0	3	1,280
10	2	2	3	2	4	2A	6	3	5	2	5	5	2	3	2	2	3	1	1	0	2	1,400
11	2	2	2	2	2	1	5	4	4	2	5	3	0	2	0	0	0	1	2	0	0	1,090
12	1	2	3	2	3	1	5	5	5	1	5	3	0	3	0	0	0	1	2	3	0	1,235
13	1	2	2	2	2	1	3	5	5	1	5	0	0	NA	0	0	0	0	1	0	0	1,260
14	1	3	2	3	4	2B	5	6	5	6	6	5	NA	6	5	5	5	1	1	0	0	1,340
15	1	1	2	2	4	2A	3	4	5	2	3	2	NA	6	5	5	5	0	1	0	0	1,240
16	2	2	1	1	4	2A	5	4	4	2	4	2	NA	3	5	4	5	1	2	2	1	1,440
17	2	3	1	2	4	2B	6	3	6	2	3	2	5	6	5	3	6	0	1	0	0	1,085
18	2	3	2	3	2	1	3	5	4	2	3	0	0	0	0	0	0	1	1	0	3	1,270
19	2	3	3	2	4	2B	5	2	5	4	5	4	5	3	5	2	5	0	1	0	0	1,250
20	2	3	2	2	3	1	5	5	4	2	3	1	0	3	0	0	0	2	1	0	0	1,373
21	2	3	3	3	4	2A	6	5	5	3	5	4	3	5	5	3	5	1	1	0	0	1,330
22	2	3	2	2	4	2A	6	5	6	3	5	5	2	4	5	3	5	1	1	2	3	1,380
23	2	3	3	3	3	1	5	5	5	4	5	4	2	2	0	0	0	1	1	1	0	1,240
24	2	3	3	3	4	1	5	4	5	5	5	5	2	4	0	0	2	0	0	0	0.5BS	1,450
25	1	2	2	3	4	2A	3	3	5	2	3	2	5	6	5	3	6	0	2	1	1	1,500
26	1	2	3	1	4	2A	3	1	5	2	3	0	2	3	2	2	4	1	1	0	0	1,110
27	2	3	2	3	2	1	5	6	5	3	3	3	NA	0	0	0	0	1	1	0	0	1,485
28	1	2	2	2	4	2A	5	5	5	3	4	5	2	5	4	3	3	0	2	2	0	1,100
29	1	3	3	2	4	2B	5	3	5	5	4	5	4	6	5	4	5	3	3	3	0	1,050
30	2	3	3	2	3	1	5	2	5	2	2	2	0	3	0	0	0	1	3	0	0	1,093
31	2	3	3	3	4	2A	5	5	5	3	5	5	5	3	2	3	5	0	1	0	0	1,280
32	2	2	3	3	4	2A	4	3	4	3	4	5	5	3	4	2	4	0	1	0	0	1,425
33	3	3	3	3	1	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1,470
34	2	3	3	3	4	2A	4	2	4	2	3	2	0	3	2	0	2	0	1	0	0	1,165
35	3	3	3	3	3	1	4	1	3	3	3	1	0	3	0	0	0	1	1	0	0	1,120
36	2	3	3	3	4	2A	5	0	5	3	2	5	5	NA	4	3	3	1	1	0	0	1,410
37	3	3	3	3	4	2A	2	1	1	5	3	2	5	6	5	4	5	0	1	0	0	790
38	3	3	3	3	3	1	5	1	3	3	3	3	3	3	0	0	0	0	1	0	0.5Ob	1,310
39	3	3	3	3	4	2A	4	1	3	3	3	2	2	4	3	2	4	1	1	0	2	1,210
40	3	3	3	3	2	1	3	1	5	3	3	2	1	1	0	0	0	0	1	0	0	1,610
41	3	3	3	3	4	2A	4	2	4	4	5	3	3	4	2	2	4	1	1	0	0	1,010
42	3	3	3	1	3	1	5	3	5	3	4	5	0	3	0	0	0	0	1	0	0	1,240
43	1	2	3	3	3	1	4	2	4	1	3	3	0	3	0	0	0	0	1	0	0.5SY	1,280
44	3	3	2	3	3	1	5	1	3	3	4	1	0	3	0	0	0	0	0	0	0	1,515
45	1	1	3	2	3	1	3	4	3	3	5	2	0	3	0	0	0	0	1	0	0	1,410
46	2	2	2	3	Not Applicable	1	5	5	5	1	3	3	0	0	0	0	4	2	3	2	0.5Ob	1,390
47	1	1	2	3	Not Applicable	Not Applicable	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1,440

We establish ALS bank in collaboration with Tokushima University together with 300 control spinal cord.



Spinal cords are recovered from all cases. After sampling for histopathological evaluations, the remaining spinal cords are frozen for biochemical and molecular studies.



The Brain Bank for Aging Research is defined as activity of TMGHIG funded by Tokyo Metropolitan government in collaboration of all members of our institute. Emeritus Professor Imahori continuously supported the activity and logged into the bank after preregistration

The Brain Bank for Aging Research (BBAR)

TMGHIG

Resources consisting of consecutive autopsy cases from a general geriatric hospital & all Japan depository of rare neurological and developmental disorders (http://www.mci.gr.jp/BrainBank)

In House Cohort Resource

1. Paraffin blocks and glass slides (1972.5–)
   for Clinical, Radiological and Pathological Research 7418
   >2. Frozen neocortex and body tissues (1995.1–)
   for Molecular Research: 2,415
   >3. Frozen half brains (2001.7–)
   for Neuroscience Research: 1,102
2. All Japan Neurological and Developmental Depository 120

In collaboration with Brain Bank for Neurodevelopmental, Neurological and Psychiatric Disorders (BBNNPD)

The Brain Bank for Aging Research has been accumulating paraffin blocks of brain and body tissues since 1972, frozen small pieces of brain and body tissues since 1995 and frozen half brains, spinal cords and peripheral autonomic nervous tissues since 2001. We are also responsible for all Japan depository of rare intractable neurological disorders.

BBAR Resource Center

- A full time coordinator.
- All BBAR records stored in our digital clinical chart system with Brain Bank ID.
- BBAR Resource Center:
  24 deep freezers, including one for a national prion back- up bank

- >7000 case paraffin blocks
- BBAR Data Center: a virtual slide system for educational output.
- BBAR Internet Conference Room
  with Osaka U., Toneyama and Fukushimura

The Brain Bank for Aging Research (BBAR) employs a full-time coordinators. All BBAR registrants' data are stored in clinical chart system with the brain bank ID. We have a resource center, carrying 24 deep freezers and paraffin blocks of more than 7000 cases.

The BBAR Data Center is equipped with a virtual slide system for neuropathological education. The BBAR network conference room is connected to the National Center for Neurology and Psychiatry (NCNP), Osaka University, NHO Osaka Toneyama Medical Center and Fukushimura Brain Bank for neuropathology quality assuarance conference once a week.

Brain Bank Registrants BBAR (Aug. 2021) : (Preregistrants: 203)

No.	Age	Gen.	Dix	Con.	Place of death/ auto.
1	80	M	Heart	S	TMGHIG
2	83	M	FAD	F	Body transfer
3	79	F	FAD	F	Brain transfer
4	69	F	CBD-PNFA/ TDP-43 type A	F	Body transfer
5	86	F	AD	F	Brain transfer
6	91	M	AD/CAA/DG/ HS-TDP-43	S	Body transfer
7	84	F	PSP	S	Body Transfer
8	89	F	(Colon Ca)	S	TMGHIG
9	84	M	CVD	F	TMGHIG
10	86	M	AD	F	TMGHIG
11	88	F	DLB	F	Body transfer
12	93	F	PD	S	TMGHIG
13	99	F	DLB	F	Body transfer
14	73	M	(肺癌)	F	Body transfer
15	111	F	NFTD	F	Body transfer
16	90	F	AD	F	Body transfer
17	97	M	NFTD/ PSP/LBD/DG	F	Body transfer
18	72	M	CVD	F	Body transfer
19	61	M	Encephalit.	F	Body transfer
20	79	M	CJD	F	Body transfer
21	83	M	Malignant ly.	F	Body transfer
22	95	F	iNPH	F	Body transfer
23	80	F	ALS	F	TMGHIG
24	78	F	PSP	F	Body transfer
25	74	M	LBD	F	Body transfer
26	79	M	AD	F	Body transfer
27	91	F	AD	F	Body transfer

No.	年齢	性別	Dix	同意	死亡場所・剖検施設
28	83	F	PSP	F	Body transfer
29	90	F	AD	S	Body transfer
30	87	F	AD	F	Body transfer
31	95	M	AGD	S	Body transfer
32	85	M	AGD	F	Body transfer
33	80	F	ALS	F	Body transfer
34	80	M	SMA	F	Body transfer
35	70	F	PSP	F	Body transfer
36	68	M	CBD	F	Body transfer
37	84	M	ALS	S	Body transfer
38	69	M	PSP	S	Brain transfer
39	86	M	PDD	F	Body transfer
40	93	M	PSP	F	Brain transfer
41	87	F	Early AD	S	Body transfer
42	77	F	AD	F	Body transfer
43	86	M	DLB/AD	F	Body transfer
44	80	M	AD/AGD	F	Body transfer
45	83	F	PSP	F	Body transfer
46	68	M	PSP	F	Body transfer
47	78	M	PSP	F	Body transfer
48	102	F	(Influ.)	F	Body transfer
49	69	M	CVD	F	Brain trasfer
50	83	F	AD/DLB	F	Body transfer
51	63	M	Cereb. Con.	F	Body transfer
52	86	M	FTLD-TDP typeC	F	Body transfer
53	89	F	CJD	F	Body transfer
54	94	M	eAD/AGD	F	Body transfer

No.	年齢	性別	Dix	同意	死亡場所・剖検施設
55	44	M	SPG11	F	Body transfer
56	78	F	AGD	F	Body transfer
57	85	M	CJD MV1	S	Body transfer
58	85	M	(renal Ca)	S	Body transfer
59	61	M	ALS	S	Brain transfer
60	86	M	(Lung Ca)	F	Body transfer
61	82	F	(CVD)	F	TMGHIG
62	85	F	PSP	F	Body transfer
63	92	M	AD	F	Body transfer
64	61	F	fCJD	F	Body transfer
65	85	F	CJD/PD	F	Body transfer
66	82	F	PSP	F	Body transfer
67	49	F	NMO	F	Body transfer
68	82	F	PSP	F	Body transfer
69	72	M	AD	F	Body transfer
70	41	F	SCA1	F	Body transfer
71	83	M	AD	F	Body transfer
72	92	M	AD	F	Body transfer
73	91	F	AD	F	TMGHIG
74	63	F	Tauopathy	F	Body transfer
75	85	M	SCA6	S	Body transfer
76	82	M	AD	S	Body transfer
77	57	M	CJD	F	Body transfer
78	86	M	Y-10227 (pending)	F	Body transfer
79	65	F	Y-10231 (pending)	F	Body transfer

Brain Bank Registrants in BBAR reached 79 among 203 preregistrants.

2021 Collaboration

	PI	Institute	Research theme
1	Ikeuchi, K.	NIBR	apoE4 and aging brain
2	Kuwano, R.	NIBR	miRNA editing in Alzheimer brain
3	Toda, T.	Kobe Univ.	Genomic pathology of neurological disease
4	Nishimura, M.	Mol. Neurosci. Shiga Med. Univ.	Novel protein in human aging
5	Hasegawa, M.	Tokyo Metro. Inst. Med. Sci.	CSF early biomarker of AD
6	Ono, M.	Pharm. Shiga Med. Univ.	Estrogen receptor in AD
7	Hisanaga, S.	Tokyo Metro. Univ.	Tau phosphorylation in tauopathy
8	Takahashi, Y.	Neurol. NCNP	Immunocytochemistry of ALS
9	Yamanaka, K.	Enviro. Res. Nagoya Univ.	Novel biomarker in neurodegeneration
10	Ito, M.	TMGHIG	SiRNA in argyrophilic grain disease
11	Okamura, N.	Tohoku Pharm. Univ.	Pet ligand for tau and alpha- synuclein
12	Miyasaka, T.	Life Sci. Doshisha Univ.	Imaging mass spectroscopy of human brain
13	Tanaka, M.	Riken	DISC1 and neurodegeneration
14	Tsuji, S.	Neurol. UT	Genomic screening in neurodegeneration
15	Ishikawa, K.	Neurol. TMDU	Genomic screening of ACA
16	Iwata, A.	Neurol. UT	Epigenetics of ALS
17	Tokumaru, A.	Raidiol. TMGHIG	White matter change in MRI
18	Hattori, N.	Neurol. Junten. Univ.	Genomic screening of PD
19	Kwak, S.	Neurol. UT	RNA editing in ALS
20	Kubo, S.	Neurol. Junten. Univ.	Back ground pathology of early LBD
21	Okazawa, H.	Neuropath. TMDU	Proteomic analysis of neurodeneratiion.
22	Kokubo, Y.	Mie Univ.	ALS/PDC Kii
23	Higuchi, M.	NIRS	alpha- synuclein ligand
24	Honma, N.	Patho. Toho Univ.	Estrogen receptor in AD
25	Hashimoto, Y.	Fukushima Med. Univ.	Glycosylation in AD
26	Sengoku, R.	Neurol. TMGHIG	Pathology of olfactory plate
27	Hashimoto, K.	Psy. Res. Cntr. Chiba Univ.	Lipid metabolism in PD
28	Saito, Y.	Life Sci. Doshisha Univ.	anti- oxidant DJ1 in LBD
29	Kato, T.	Riken	Neuropathology of depression
30	Nagata, N.	Animal Radiol. UT	L-PGDS in NPH
31	Kabuta, T.	NCNP	Chaperone- mediated autophagy
32	Sato, N.	NCGG	DM and demntia
33	Ri, M.	Juntendo Univ.	*CHCHD2* gene in neurodegeneration
34	Ishii, K.	Pet Center TMGHIG	Neuropathology of tau imaging
35	Imaizumi, K.	Hiroshima Univ.	ER stress
36	Nagai, Y.	Osaka Univ.	exome analysis of in vivo proteostasis
37	Araki, I.	NCNP	BACE1 and synapse degeneration in AD
38	Yamagoshi, T.	NCGG	Salivary gland in aging
39	Kameyama, A.	AIST	Glycomics in aging
40	Ishigami, A.	TMGHIG	Citrulinated protein as an early biomarker of AD
41	Suhara, T.	NIRS	Dynamic pathology of amyloid- negative dementia
42	Ishiura, H.	Neurol. UT	High grade genome study of neurodegeneration

BBAR provided its resource to 42 laboratories in 2020.

2021 publication

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3. Beck G, Hirozawa D, Honma K, Baba K, Sumi H, Morii E, Murayama S, Mochizuki H: Adult-Onset Biotinidase Deficiency Induces Acutely Progressing Leukoencephalopathy. Neurol Clin Pract 2021, 11:e383-e6.
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9. Kumutpongpanich T, Ogasawara M, Ozaki A, Ishiura H, Tsuji S, Minami N, Hayashi S, Noguchi S, Iida A, Nishino I, Group OLS, Mori-Yoshimura M, Oya Y, Ono K, Shimizu T, Kawata A, Shimohama S, Toyooka K, Endo K, Toru S, Sasaki O, Isahaya K, Takahashi MP, Iwasa K, Kira JI, Yamamoto T, Kawamoto M, Hamano T, Sugie K, Eura N, Shiota T, Koide M, Sekiya K, Kishi H, Hideyama T, Kawai S, Yanagimoto S, Sato H, Arahata H, Murayama S, Saito K, Hara H, Kanda T, Yaguchi H, Imai N, Kawagashira Y, Sanada M, Obara K, Kaido M, Furuta M, Kurashige T, Hara W, Kuzume D, Yamamoto M, Tsugawa J, Kishida H, Ishizuka N, Morimoto K, Tsuji Y, Tsuneyama A, Matsuno A, Sasaki R, Tamakoshi D, Abe E, Yamada S, Uzawa A: Clinicopathologic Features of Oculopharyngodistal Myopathy With LRP12 CGG Repeat Expansions Compared With Other Oculopharyngodistal Myopathy Subtypes. JAMA neurology 2021, 78:853-63.
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17. Sakaue S, Kanai M, Tanigawa Y, Karjalainen J, Kurki M, Koshiba S, Narita A, Konuma T, Yamamoto K, Akiyama M, Ishigaki K, Suzuki A, Suzuki K, Obara W, Yamaji K, Takahashi K, Asai S, Takahashi Y, Suzuki T, Shinozaki N, Yamaguchi H, Minami S, Murayama S, Yoshimori K, Nagayama S, Obata D, Higashiyama M, Masumoto A, Koretsune Y, FinnGen, Ito K, Terao C, Yamauchi T, Komuro I, Kadowaki T, Tamiya G, Yamamoto M, Nakamura Y, Kubo M, Murakami Y, Yamamoto K, Kamatani Y, Palotie A, Rivas MA, Daly MJ, Matsuda K, Okada Y: A cross-population atlas of genetic associations for 220 human phenotypes. Nat Genet 2021, 53:1415-24.
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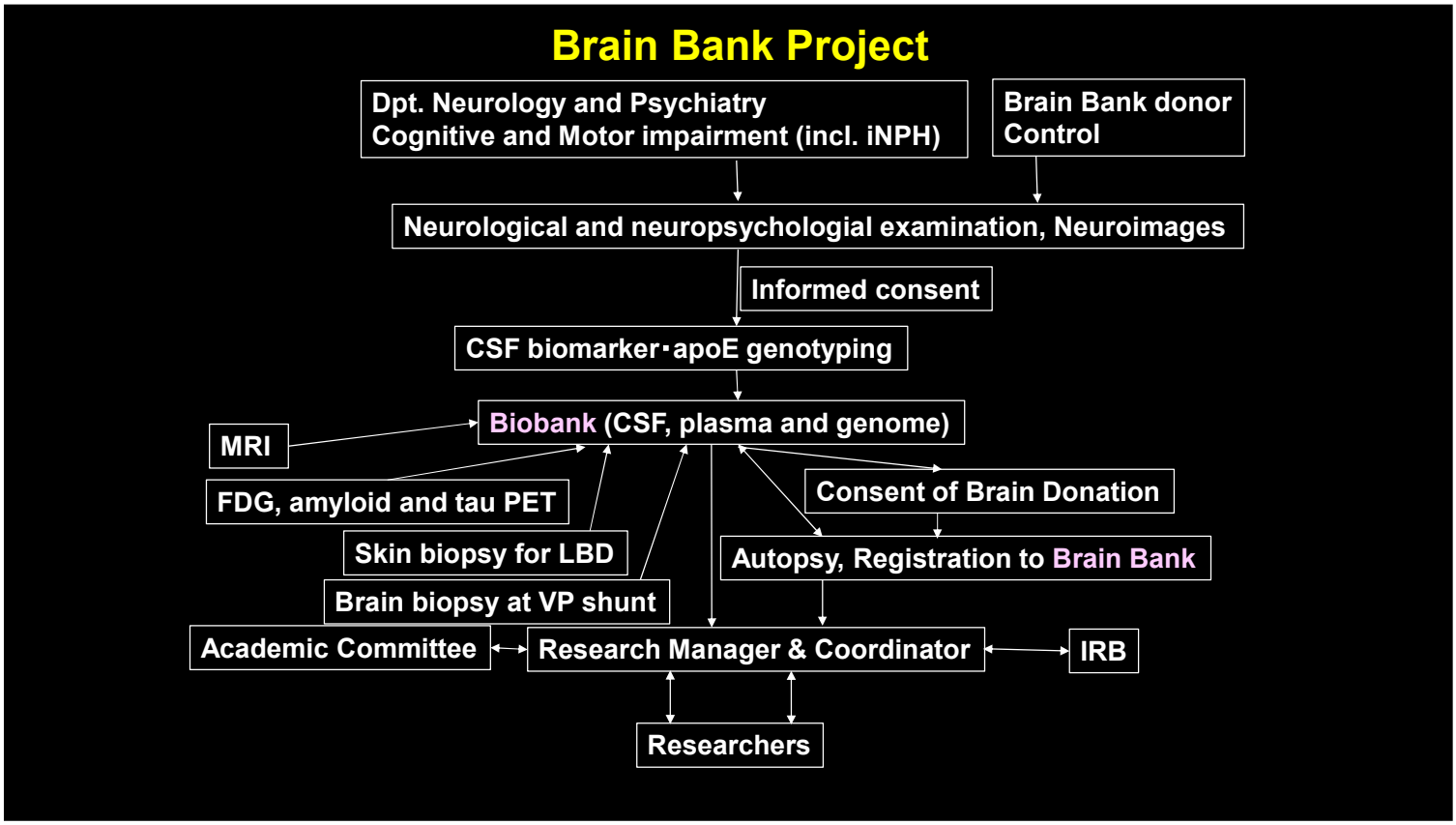
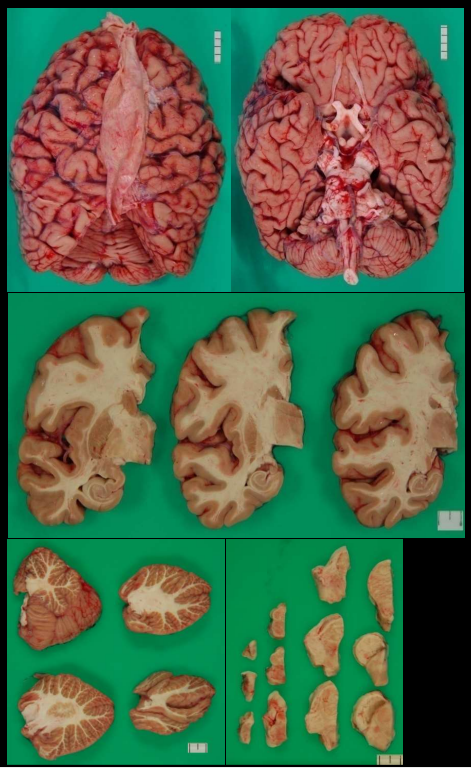
We published 20 English original peer- reviewed papers in 2020.



Our brain bank projet includes biobanking of CSF, plasma and gnome of living patients and controls.

Autopsy of Brains

- Each case is handled by an attending brain bank doctor (neuropathologist) and a technician (specially trained), in collaboration with an attending general pathologist and two technicians.
- The attending brain bank doctor determines the frozen side.
- The doctor forms 8mm-thick serial coronal slices of the brain, 5mm- thick serial sagittal slices of the cerebellum and 5mm- thick axial slices of the brain stem.
- The technician takes photos and freezes tissues immediately.



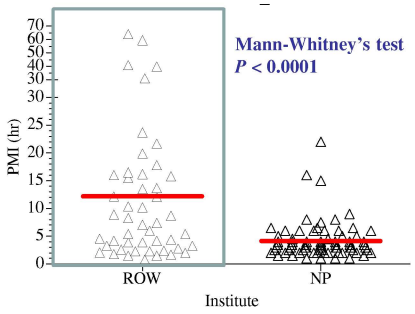
In our brain bank system, each autopsy is conducted by a general pathologist, an autopsy technician and a laboratory technician, in collaboration with a neuropathologist and a brain bank technician (2). Thus, every autopsy is handled by at least five professionals.

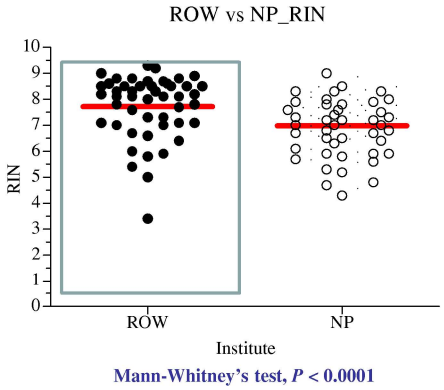
Total RNA Quality Check (Dpt. Mol. Biol. Niigata Univ. BRI)

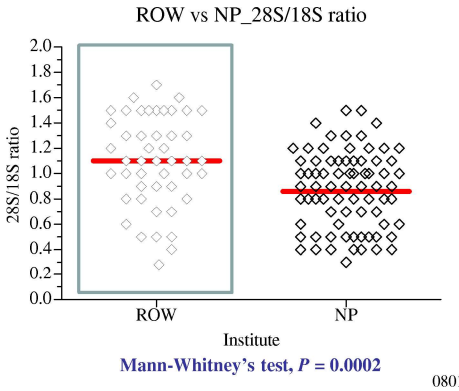
DNA & RNA Back Up

BBAR (N=48: ROW) vs Control (N=78: NP)

RNA Quality of BBAR is better than rapid autopsy control, probably due to a very short cooling interval (interval between death and transfer to a refrigerator).







080121 (Mon)

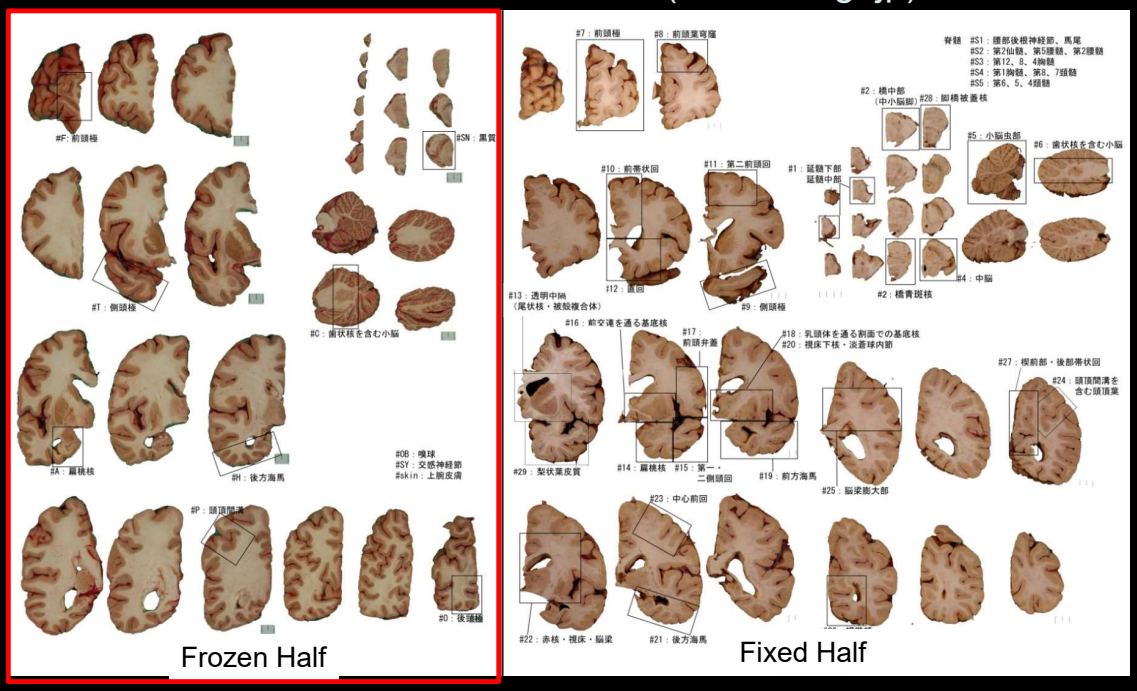
In collaboration with the Department of Molecular Biology, the Brain Research Institute at Niigata University (BRIN), we check the RNA qualities of all cases to meet NIH requirement. Niigata works as DNA/ RNA backup bank.

BBAR Resource (Frozen)

- Half brain after sampling small pieces of tissues for weak fixation.
- Entire spinal cord, after sampling the segments for pathological evaluation.
- Peripheral autonomic nervous system: sympathetic ganglia, esophago- columnar junction, heart, skin and olfactory plate.
- Skeletal muscle: biceps brachii (for the study of sarcopenia)
- General organs: small pieces of liver, kidney, lung, esophagus
- Serum (stored in the hospital laboratory).

Frozen resource includes half brain, entire spinal cord, peripheral autonomic nervous system, skeletal muscle, small pieces of general organs and serum.

BBAR Protocol (www.mci.gr.jp)



8 areas: 4% paraformaldehyde over 2 nights
(McGeer's method @ British Columbia)

From the frozen side, eight small samples from specific anatomical areas are fixed in 4% paraformaldehyde over two nights for better correlation with studies of experimental animals.

Brain Cutting (1972.5.1-)

Prof. Kinuko Suzuki
(80 y.o. then)

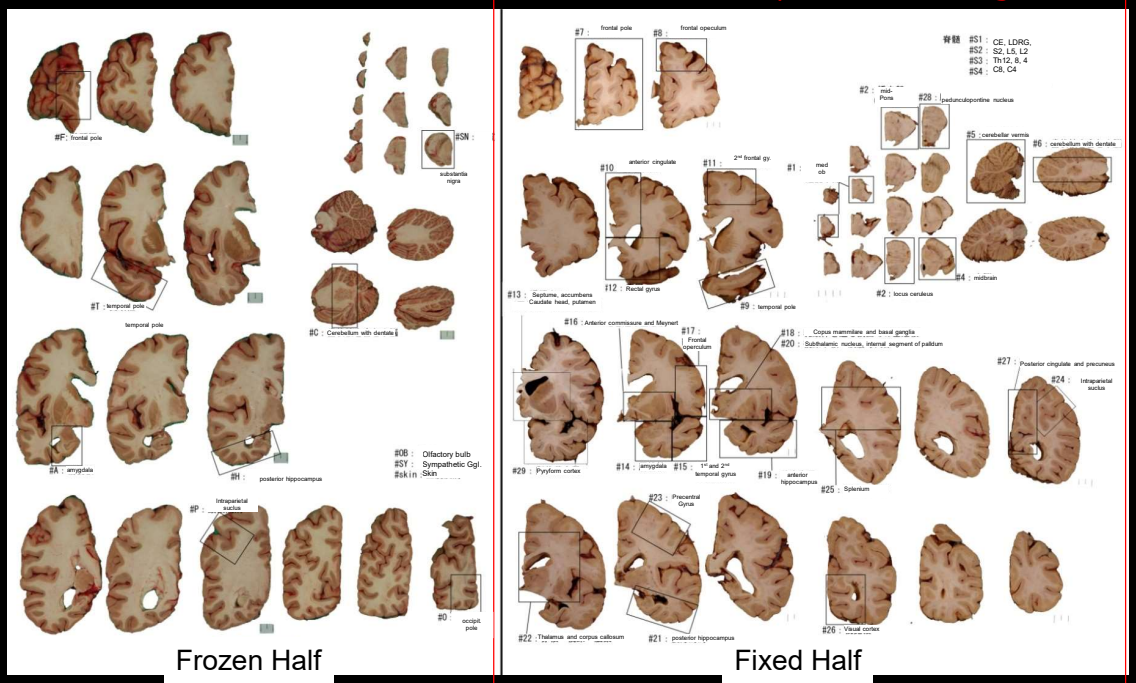
Kinuko Suzuki Award
Osaka City
Medical Committee

In collaboration of Neurology, Neuropathology, Psychiatry, Pathology and Rehabilitation, connected via internet.

Brain Cutting is an important activity for diagnosis and education, connected with BBAR, NCNP, Osaka University and Toneyama Medical Center.

BBAR Protocol: Fixed Side

Brain: 29 areas; Spinal Cord: 9 segments



Tissue blocks were obtained from a fixed side, in compliance with CERAD requirements, DLB Consensus Guideline, and Braak's recommendation that requires evaluation of bilateral amygdala and hippocampi.

BBAR Protocol: Histological Examination.

Internationally Standardized
Neuropathological Diagnostic Method

Paraffin block of >7,000 cases
easily accessible

Library

We have been accumulating glass slides and paraffin blocks in the BBAR Resource Center.

BBAR Resource (Fixed)

- 4% paraformaldehyde over two nights, one half for paraffin embedding and another half preserved in 20% sucrose PBS+0.1% NaN3
- Brain: frontal, temporal and occipital poles, intraparietal sulcus, anterior amygdala, posterior hippocampus, midbrain, dentate nucleus, olfactory bulb
- Spinal Cord: C4/8, T4/8/12, L5, S2
- Peripheral ANS: sympathetic ganglia, esophago-columnar junction, anterior wall of the left ventricle of the heart, skin, olfactory plate, biceps brachii
- 20% buffered formalin for 7-13 days
- Half brain, body organs

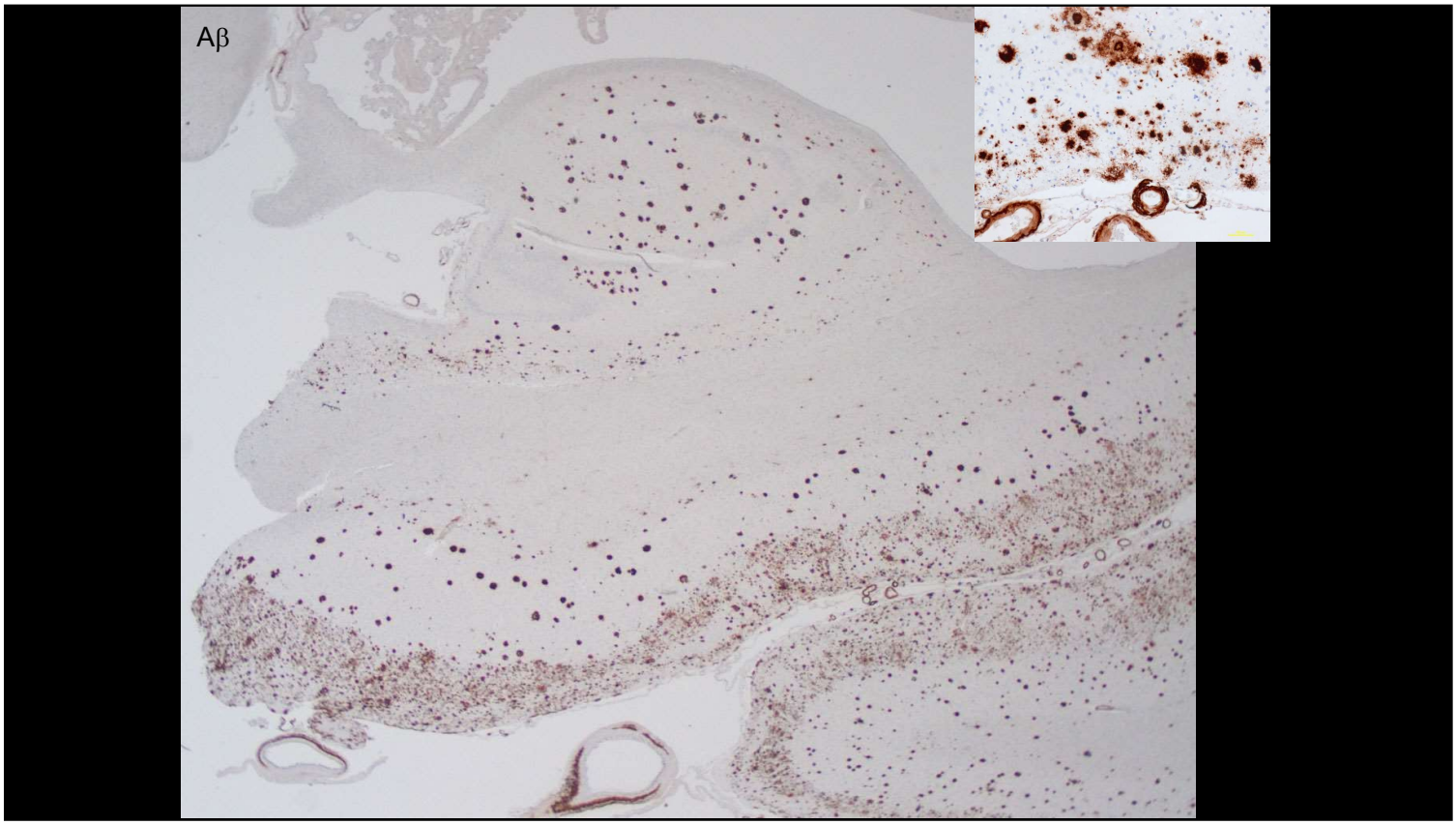
Fixed tissue resource consists of paraform- fixed tissues from a frozen half and buffered- formalin fixed tissues from a fixed half of the brain

Staining

Routine: H.E., K.B.
Special: Gallyas-Braak, methenamine silver,
Elastica Masson, Congo red, thioflavin S
Immunohistochemistry with automatic stainer（Ventana）

Epitope	Antibody	Clone
Aβ11-28aa	12B2 (IBL)	monoclonal
phosphorylated tau	AT8 (Fujirebio)	monoclonal
3R/ 4R tau	RD3/ RD4	monoclonal
phosphorylated α- synuclein	psyn64 (Wako)	monoclonal
Ubiquitin	Sigma	polyclonal
Phosphorylated TDP43	PSer409/410	monoclonal
FUS/ TLS	Sigma	polyclonal

Immunohistochemical screenings of all autopsy cases are performed with commercially available antibodies.



A section of hippocampus fixed in 4% paraformaldehyde presented numerous A-beta (11-28)- immune- positive deposits in the parenchyma and the walls of vessels.

P & CNS Screening ← tau → Lewy TDP ← Aβ →

Y−9□7□	PT	NFT	GT	NT	NP	AG		AT		Psyn		TDP	DP		CP		A/V		CCAA	
						R	L	TSA	BLA	R	L	−43	R	L	R	L	R	L	R	L
Sympathetic ganglion										o										
Dorsal root ganglion																				
Spinal cord																				
Sacral anterior horn																				
Sacral posterior horn																				
Intermediate zone (Sacral)										o	o									
Lumbar anterior horn												o								
Lumbar posterior horn																				
Lumbar anterior column																				
Lumbar lateral column										o	o									
Lumbar posterior column																				
Thoracic anterior horn																				
Thoratic posterior horn																				
Intermediolateral N. (Thoracic)										o										
Cervical anterior horn	o			o																
Cervical posterior horn																				
Medulla oblongata																				
Dorsal motor N. of vagus										o										
Hypoglossal N.																				
Inferior olivary N.																				
Pons																				
Pontine N.																				
Locus ceruleus										o										
Subceruleus																				
Pedunculopontine N.																				
Midbrain																				
Oculomotor N.																				
Edinger-Westphal N.																				
Pars compacta of SN	o			o						o	o									
Periaqueductal gray matter																				
Cerebellum																				
Cerebellar cortex													o		o		o			
Cerebellar white matter																				
Dentate N.																				
Interbrain / Basal ganglia																				
Broca's diagonal band																				
Hypothalamus																				
Nucleus basalis of Meynert	o			o																
Accumbens N.																				
Caudate N.																				
Putamen													o		o					
Ext. globus pallidus																				
Int. globus pallidus																				
Claustrum																				
Subthalamic N.																				
Thalamus																				
Allocortex (Rhinencephalon/Limbic)																				
Olfactory bulb periphery										o										
Anterior olfactory N.										o										
Piriform cortex (frontal)																				
Piriform cortex (temporal)																				
Amygdala	o	o		o		o	o	o	o	o			o		o					
Uncus / Ambient gyrus	o	o		o		o	o					o								
Dentate gyrus	o	o	o	o																
Hippocampus CA4	o	o	o	o																
Hippocampus CA3	o	o	o	o																
Hippocampus CA2	o	o	o	o						o										
Hippocampus CA1	o	o	o	o								o	o		o					
Subiculum	o	o	o	o		o	o					o								
Presubiculum																				
Entorhinal	o	o	o	o								o								
Transentrhinal	1	1	o	1						o										
Insular cortex																				
Anterior cingulate gyrus																				
Temporal pole (medial)																				
Cerebral neocortex (isocortex)																				
Temporal pole (lateral)																				
T4	o	o	o	o																
T2	o	o	o	o									o		o		o			
Fronatal pole													o		o		o			
F2																				
Supramarginal gyrus													o		o		o			
Visual association cortex																				
Striate area													o		o		o		o	
Primary motor cortex																				

We screen all cases immunohistochemically. Blue highlights denote the peripheral autonomic nervous system, and the orange rectangle, the spinal cord.

BBAR Degenerative Pathology Database

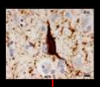
BBAR	Y96XX									
A/G	CDR	PMI	NFT	AT8	SP	CERAD	Thal	LB	LB score	DLB 3rd
93M	3	11:22	4/3	3/3	2	2	5	4	4	Limbic (amygdala predominant)
Grain	AA	AT	UD	TDP	ApoE	RIN				NPD
0.5/ 0.5	1C	1	3	T1M1S0	3/3	8.1				AD, LBD, CVDE

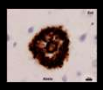
A/G age/ gender
CDR (clinical dementia rating): 0-3
PMI: postmortem interval
NFT (tangle: Braak Stage): 0-6
AT8 (tangle: AT8 Stage) 0-6
SP (senile plaque: Braak Stage): 0-3
CERAD 0-3 (0- C)
Thal (amyloid Thal Stage) 0-5
Lewy (Lewy body, BBAR Stage): 0-5
DLB score (DLB 1st Consensus Guideline)
DLB 3rd (DLB 3rd Consensus Guideline)
Grain (argyrophilic grain, Saito Stage): 0-3
AA (amyloid angiopathy, BBAR Stage): 0-3
AT (astrocytic tangle): 0-3
UD (ubiquitinated dots): 0-3
TDP (TDP-43 proteinopathy, temporal, medulla and spinal) 0-3
ApoE (apoE genotyping)
RIN (RNA intergrity number)
NPD: neuropathologic diagnosis (AD: Alzheimer disease; LBD: Lewy body disease; CVDE: embolic infarct)

Each case is evaluated with international standards. Researchers who apply to BBAR choose samples based on this database.

DNA Resource (1,890 cases)

Braak NFT/ SP



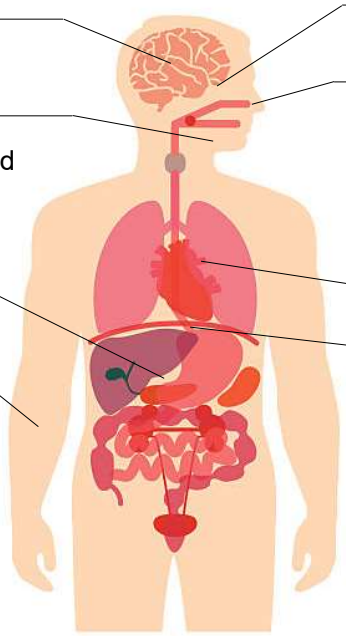
	0	I	II	III	IV	V	VI	計
0	34 66.3	314 75.8	102 81.8	46 85.6	12 85.4	1 81.0	0 -	509 77.5
A	16 75.5	350 78.0	149 83.6	74 86.2	23 88.6	1 99.0	0 -	613 80.6
B	8 76.1	169 79.9	91 82.8	70 85.6	23 91.2	2 82.0	1 94.0	364 82.4
C	3 76.0	50 79.4	51 83.0	80 84.5	80 86.6	100 86.4	40 83.9	404 84.4
計	61 70.5	883 77.7	393 82.9	270 85.4	138 87.6	104 86.4	41 84.1	1890 80.9

Case #
Average Age

Alzheimer Disease: 220/ 1890 = 11.6%

DNA resources represent progressive accumulation of tangles and plaques. We adopt Braak NFT Stage equal to or more than IV and SP Stage C for diagnosis of Alzheimer disease.

Epidemiological Neuropathology of Lewy body disease

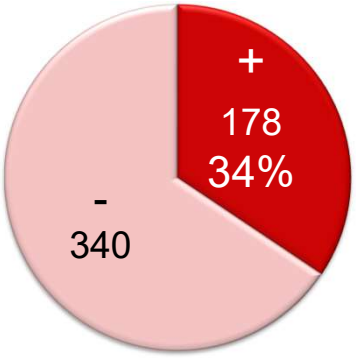


我々はレビー小体病に関する疫学神経病理検討を行っています。隅蔵先生は現在大阪急性期総合医療センター勤務です。初田先生は枚方で開業しておられます。

Lew body disease Body Resource

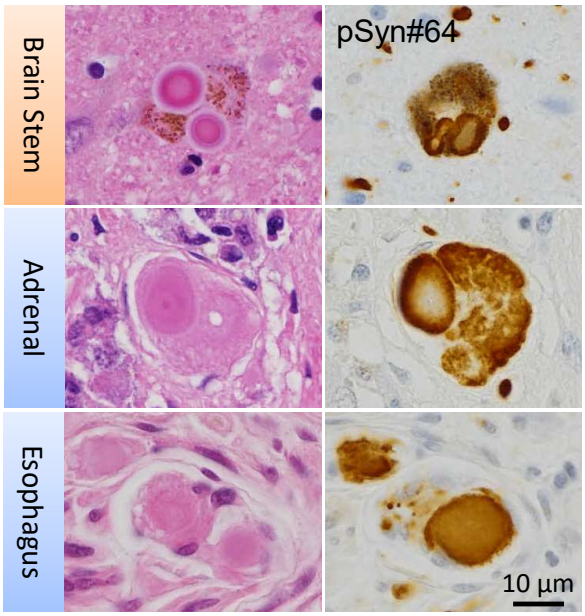
About 1/3 of aged population contained Lewy bodies in the body.

BBAR 1,057 cases
（2003〜2018）



BBAR 518 cases
（2008 〜 2018）
Screening GI tracts

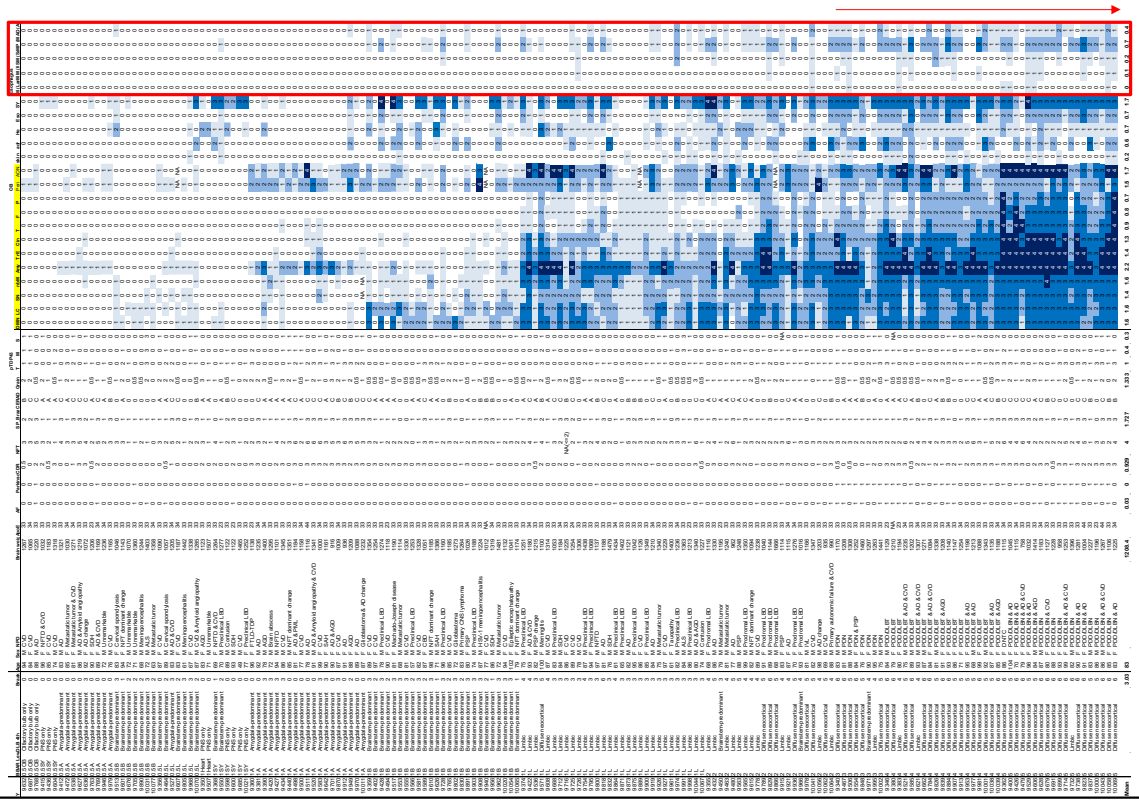
Acta Neuropathologica Tanei et al 2021



Acta Neuropath in press

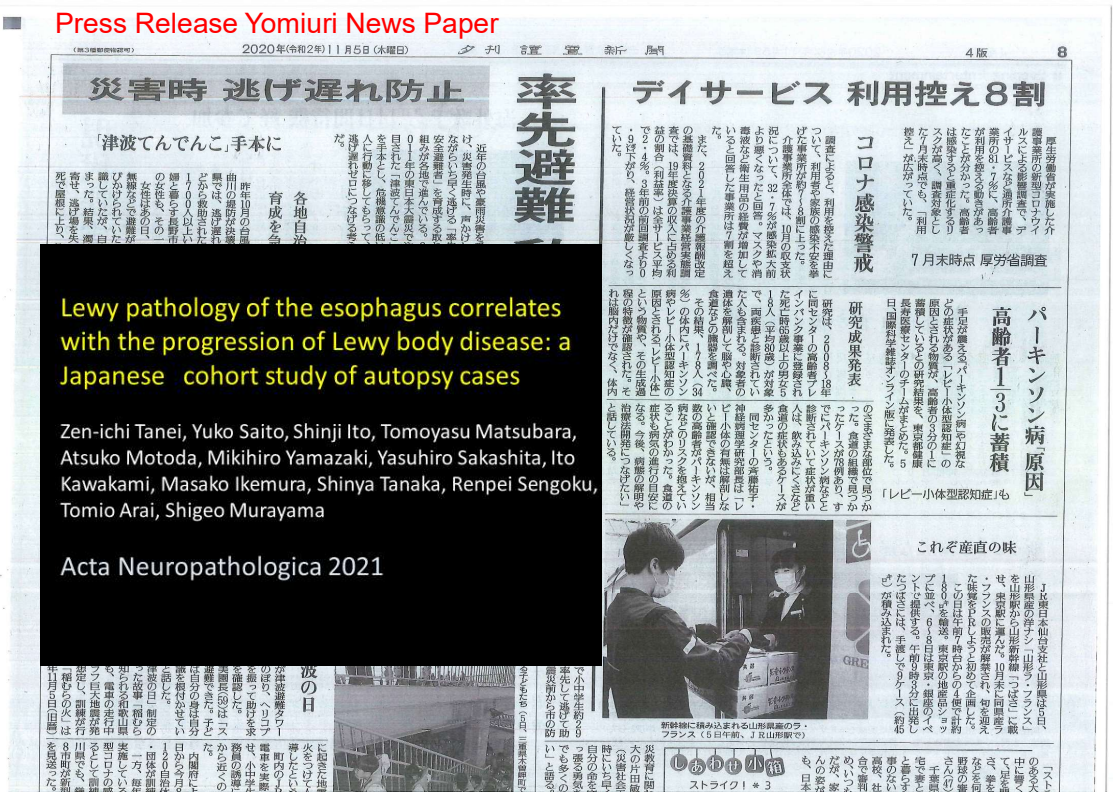
レビー小体は高齢者の1/3には体のどこかにあります。

Lewy body in the esophagus correlated with severity of Lewy body disease.



我々は連続開頭剖検例の老化病理を網羅的にスクリーニングし、高齢者における変性型老化性変化の疫学的検討を行っています。これはそのヒートマップ図です。赤で囲まれた胃・食道移行部のレビー小体病理はレビー小体病理全体が進行していくにつれ病変が拡大していくことがわかります。

Press Release Yomiuri News Paper



2020年(令和2年)11月5日(木曜日) 夕刊 読賣新聞 4版 8

災害時 逃げ遅れ防止

「津波てんでんこ」手本に

率先避難

デイサービス 利用控え8割

コロナ感染警戒

7月末時点 厚労省調査

パーキンソン病 原因」

高齢者1/3に蓄積

研究成果発表

「レビー小体型認知症」も

これぞ産直の味

新幹線に積み込まれる山形県産のラ・フランス（5日午前、JR山形駅で）

Lewy pathology of the esophagus correlates with the progression of Lewy body disease: a Japanese cohort study of autopsy cases

Zen-ichi Tanei, Yuko Saito, Shinji Ito, Tomoyasu Matsubara, Atsuko Motoda, Mikihiro Yamazaki, Yasuhiro Sakashita, Ito Kawakami, Masako Ikemura, Shinya Tanaka, Renpei Sengoku, Tomio Arai, Shigeo Murayama

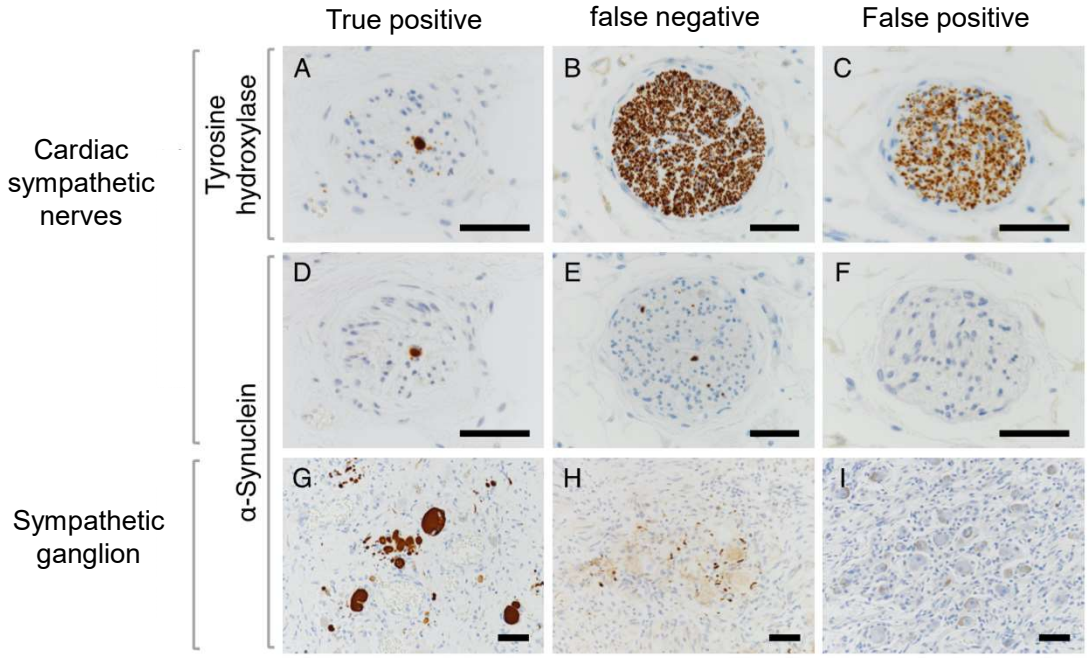
Acta Neuropathologica 2021

この成果はAMEDでプレス発表し、読売新聞に掲載されました。

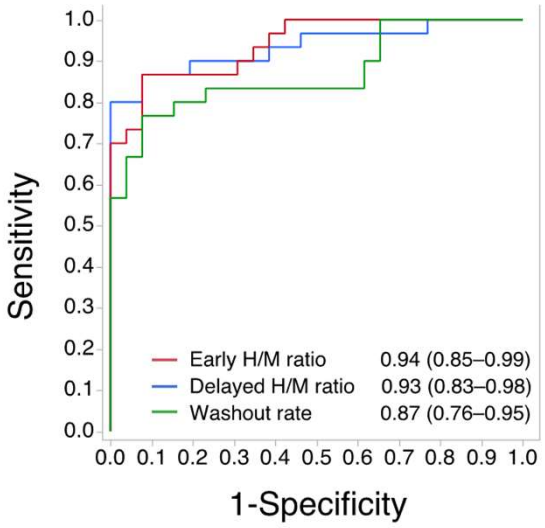
RESEARCH ARTICLE OPEN ACCESS

Autopsy Validation of the Diagnostic Accuracy of ^{123}I-Metaiodobenzylguanidine Myocardial Scintigraphy for Lewy Body Disease

Matsubara, T. et al
Neurology 2022;



左室前壁周囲の脂肪織内の神経束と、胸部交感神経節の所見です。真陽性例は交感神経節後線維は高度に脱落し、神経束、交感神経節にシヌクレインが沈着を認めます。偽陰性例は、αシヌクレインは神経束、交感神経節ともあるのですが、交感神経節後線維は保たれています。偽陽性例はαシヌクレイン沈着はありませんが、節後線維密度は軽度低下している可能性があり、年齢の影響が考えられます。

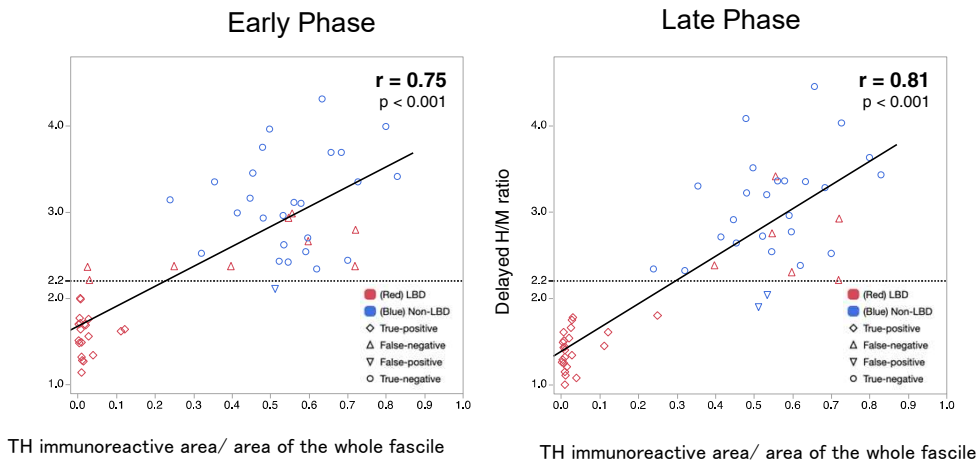


^{123}I-MIBG Cardiac Scinti.	TP	FN	FP	TN	sensitivity (95% CI)	specificity (95% CI)
Early H/M ratio (cut off: 2.20)	21	9	1	25	70.0 (50.6–85.3)	96.2 (80.4–99.9)
Delayed H/M ratio (cut off: 2.20)	24	6	2	24	80.0 (61.4–92.3)	92.3 (74.9–99.1)
Delayed H/M ratio (cut off: 1.81)	24	6	0	26	80.0 (61.4–92.3)	100.0 (86.8–100.0)
Washout rate (cut off: 34%)	24	6	4	22	80.0 (61.4–92.3)	84.6 (65.1–95.6)

病理診断に対する各パラメーターのROC曲線をお示しします。心縦隔比の方が洗出率に比して高いです。標準カットオフでの感度特異度を表にお示しします。早期相で感度70%特異度96.2、後期相は感度80%特異度92.3%です。後期相についてはカットオフを1.8に下げることで、感度を維持しながら特異度を100%に高めることができました。

H/M ratio strongly correlates with density of TH immunoreactive fibers

s



心縦隔比の値と**残存交感神経節後神経/神経束面積比は強く相関します。**

NEUROPATHOLOGY

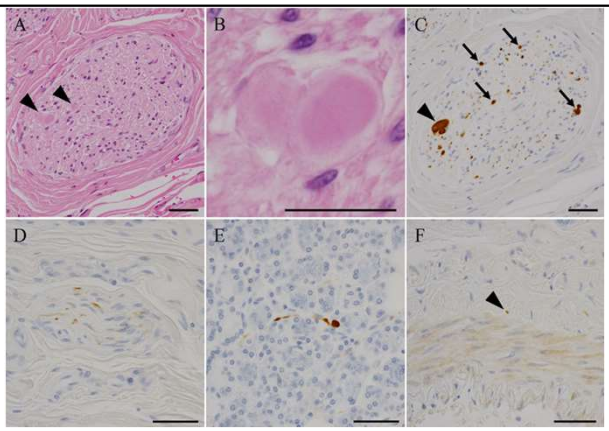
Neuropathology 2021 doi:10.1111/neup.12772

Original Article

Lewy pathology of the submandibular gland in Lewy body disease: A report of autopsy cases

Yasuhiro Sakashita,[1,2,3] Tomoyasu Matsubara,[1,4] Tadayuki Takata,[1,5] Zen-ichi Tanei,[1,6] Atsuko Motoda,[1,4] Mikihiro Yamazaki,[1,7] Ito Kawakami,[1,8] Renpei Sengoku,[1,7] Yuko Saito,[1] Tomio Arai,[2] Masahito Yamada[3] and Shigeo Murayama[1,9]

Departments of [1]Neurology and Neuropathology (the Brain Bank for Aging Research), [2]Pathology, Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology, [7]Department of Neurology, The Jikei University School of Medicine, [8]Dementia Research Project, Tokyo Metropolitan Institute of Medical Science, Tokyo, [3]Department of Neurology and Neurobiology of Aging, Kanazawa University Graduate School of Medical Sciences, Kanazawa, [4]Department of Clinical Neuroscience and Therapeutics, Hiroshima University Graduate School of Biomedical and Health Sciences, Hiroshima, [5]Department of General Internal Medicine, Kagawa University Faculty of Medicine, Miki, [6]Department of Cancer Pathology, Faculty of Medicine, Hokkaido University, Sapporo and [9]Brain Bank for Neurodevelopmental, Neurological and Psychiatric Disorders, United Graduate School of Child Development, Osaka University, Osaka, Japan



BBAR LB stage	Subtype	*n*	Positive
0		43	0
0.5	Preclinical LBD	7	0
1	Preclinical LBD	3	0
2	Prodromal LBD	4	2
3	PD	1	1
4		3	3
	PDD	0	0
	DLBT	3	3
5		3	3
	PDD	1	1
	DLBN	2	2
Total		64	9

Table 4 Lewy pathology of the submandibular gland of 168 consecutive patients used in the retrospective study

BBAR LB stage	Subtype	*n*	Positive, %
2	Prodromal LBD	57	36 (63.2)
3	PD	18	15 (83.3)
4		50	40 (80.0)
	PDD	23	21 (91.3)
	DLBT	27	19 (70.4)
5		43	35 (81.4)
	PDD	5	5 (100)
	DLBN	38	30 (79.0)
Total		168	126 (75.0)
	PD/PDD	46	41 (89.1)
	DLBT/DLBN	65	49 (75.4)

2022 Japanese Society of Neuropathology Award

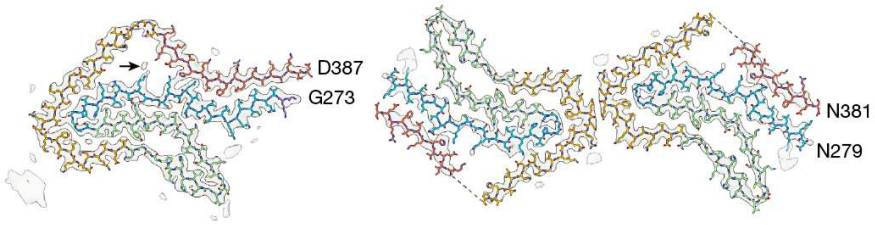
Molecular Neuropathology

Article

Structure-based classification of tauopathies

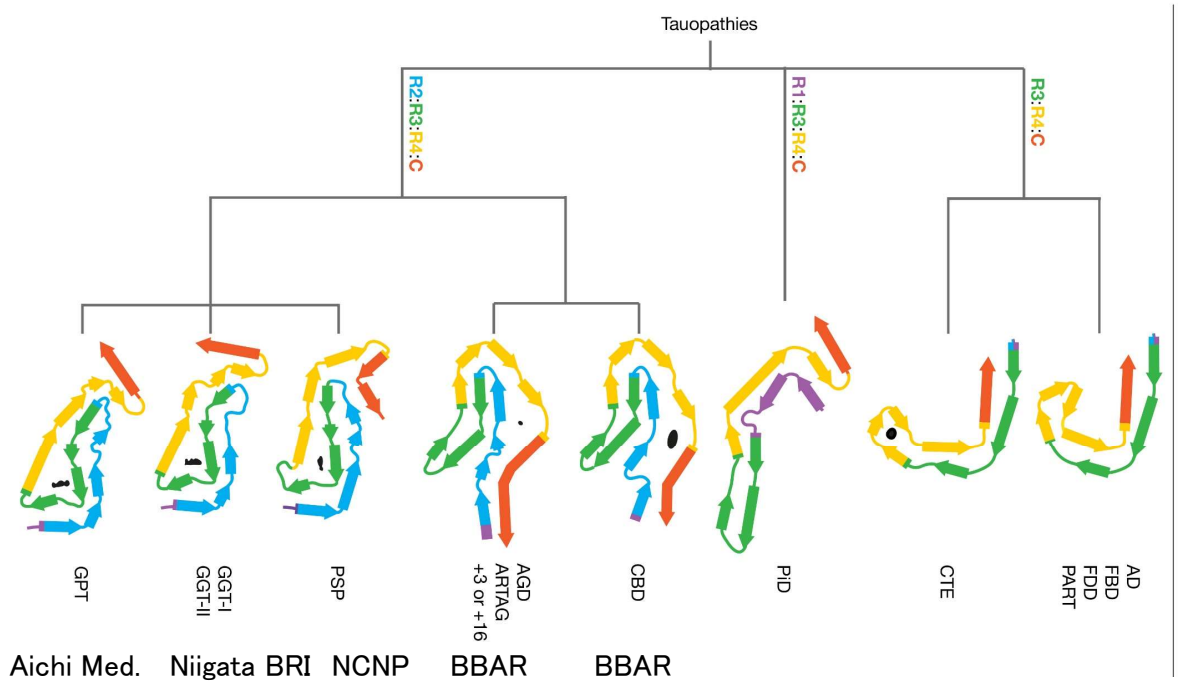
https://doi.org/10.1038/s41586-021-03911-7
Received: 1 June 2021
Accepted: 13 August 2021
Published online: 29 September 2021
Nature | www.nature.com |

Yang Shi[1,14], Wenjuan Zhang[1,14], Yang Yang[1], Alexey G. Murzin[1], Benjamin Falcon[1], Abhay Kotecha[2], Mike van Beers[2], Airi Tarutani[3], Fuyuki Kametani[3], Holly J. Garringer[4], Ruben Vidal[4], Grace I. Hallinan[4], Tammaryn Lashley[5], Yuko Saito[6], Shigeo Murayama[7], Mari Yoshida[8], Hidetomo Tanaka[9], Akiyoshi Kakita[9], Takeshi Ikeuchi[10], Andrew C. Robinson[11], David M. A. Mann[11], Gabor G. Kovacs[12,13], Tamas Revesz[5], Bernardino Ghetti[4], Masato Hasegawa[3], Michel Goedert[1,15] ✉ & Sjors H. W. Scheres[1,15] ✉



BBARから、嗜銀顆粒が単独に多数出現している側坐核を提供
光顕形態、免疫組織、WB、超微形態、タウ遺伝子変異無を確認

Structure- based classifications of tauopathies　(Nature 2021)



The quality of the Japanese Brain Bank is superior to those in Western countries.

タウオパチーの原子間顕微鏡を用いた構造解析において、愛知医大、新潟脳研、国立精神神経センター、高齢者ブレインバンクがそれぞれリソースを提供した結果です。嗜銀顆粒性認知症と、アルトログリオパチー、MAPTイントロン変異は同じ構造とされ、構造的に最も近いのはCBDだが異なるという結果でした。我々の体制が評価された結果です。

CJD Surveillance Commitee Pathology Core

- To promote autopsies of prion disease.
- To receive autopsies of outside cases.
- To report to the committee on autopsy- proven prion cases (pathology route)
- Quality control of pathological findings of registered cases.
- To establish a national prion back- up bank.
- To study natural course of prion disease.

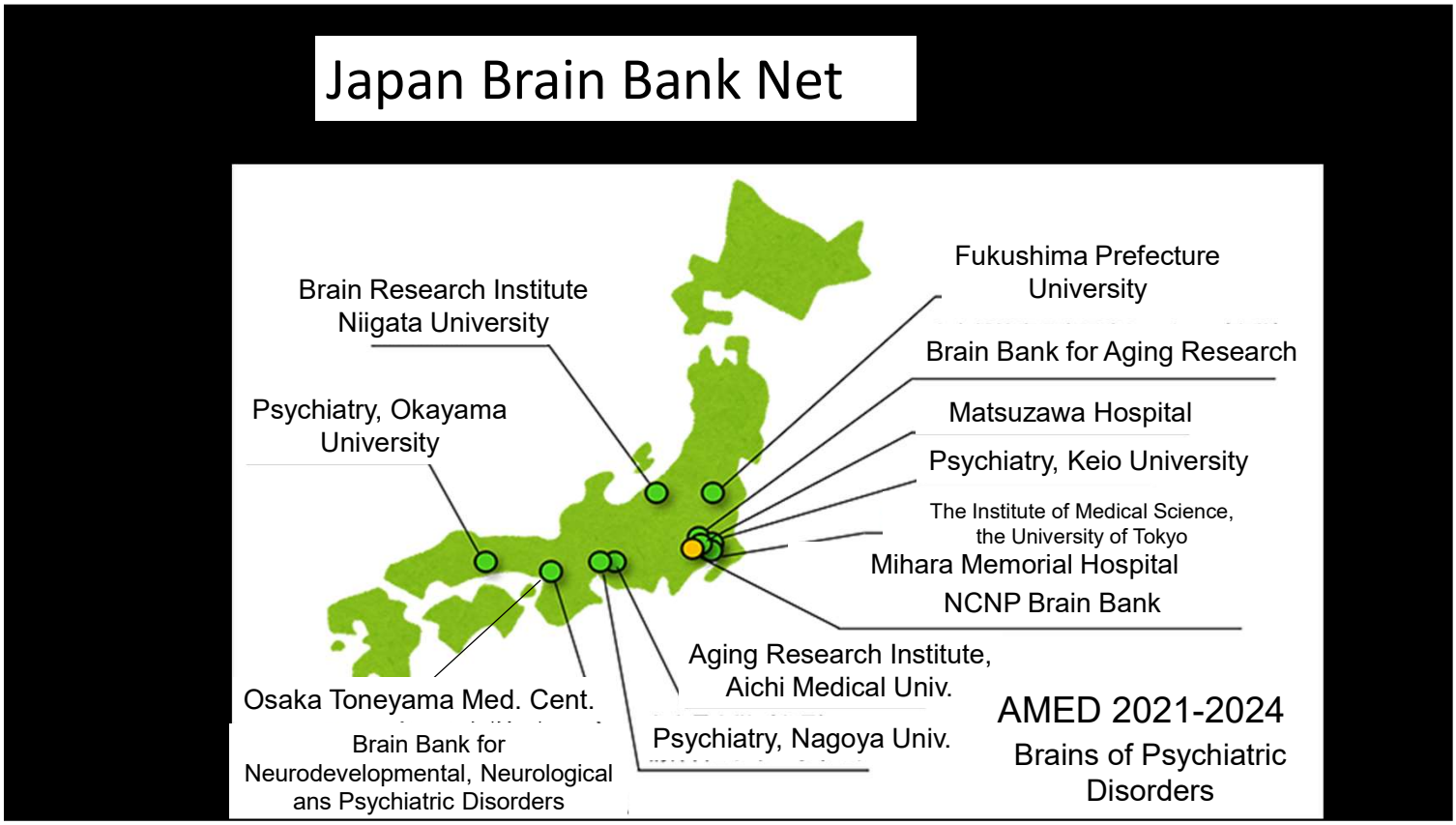
Grants in Aid from Ministry of Health, Labor and Welfare, Japan

I am a pathology core of the Japanese CJD Surveillance Committee and contribute to prion research.

International Collaboration

- Collaboration with Sydney Parkinson Disease Brain Bank funded by Michael J Fox Foundation (Prof. Halliday).
- Collaboration with Sydeney Westmead Hospital for ALS research
- Collaboration with Cambridge for atomic force microscope with Prof. Masato Hasegawa

We promote international collaboration.



I will talk about Japan Brain Bank Net, AMED guided network for psychiatric research.

A

Shortage of brains of psychiatric disorders

- The first round of JBBN (PI: Yuko Saito 2016-2020) recovered considerable number of schizophrenic brains.
- The shortage of bipolar brains still persists.
- Almost no autism brain resource is not solved yet.

Brain Donation and Psychiatric Disorders

- Neitherlands Brain Bank is promoting brain donation for psychiatric research.
- Neitherland approves physician- assisted suicide for intractable neurological disorders.
- They admit brain bank preresitrant psychiatric patients' suicide as their choice.
- In Japan, two IRBs, Fukushima Prefecture University and NCNP approve psychiatric patients' preregistration under each strict condition.
- Reliability of informed consent and trigger role for suicide are two major objections.

Autism Resource

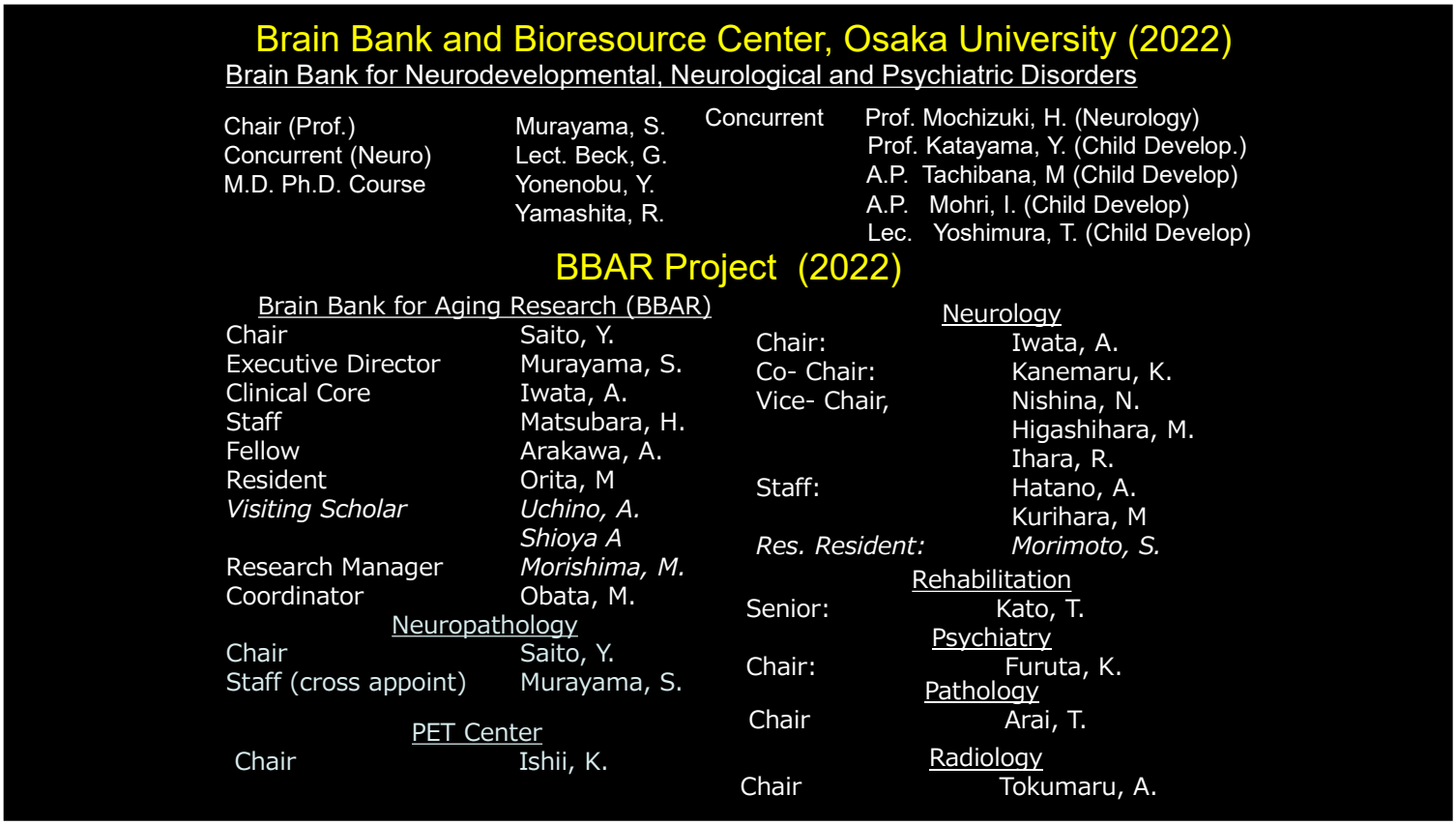
- Autism Brain Net US is major research resource, promoted by the patient parent association, supported by NIH funded Harvard University and Maine State University.
- Our center has trio genome (patients and their parents) around 100 with immortalized cultured cells.
- Clinical diagnosis, authorized by the internationally approved psychologists
- Questionnaires of the Japanese Autism Patient Association returned favorable response to brain banking.
- Our IRB will not admit the patients' pairents' preregistration.

Suicide Bank

- Major research resource for mood disorders in Western Countries.
- Regulated by the laws for tissue banking there.

“Suicide victims should go down to hell but if suicide is caused by psychiatric disorders, the victims can go up to heavens”

- Preservation of Autopsy Act in Japan requires informed consent from the first kin of relatives for research use of autopsy tissue.
- We started brain depository of suicide victims in legal autopsy in collaboration with Department of Legal University, Osaka University
- Our IRB will not admit the first kin of relatives’ informed consent after forced compulosory autopsy.



The list of BBNNPD and BBAR members.