

MATSUZAWA AFFIDAVIT

STATE OF NEW YORK
SUPREME COURT COUNTY OF NIAGARA

In the Matter of a Proceeding under Article 70 of
the CPLR for a Writ of Habeas Corpus,

THE NONHUMAN RIGHTS PROJECT, INC.,
on behalf of KIKO,

Petitioners,

v.

CARMEN PRESTI, individually and as an officer
and director of The Primate Sanctuary, Inc.,
CHRISTIE E. PRESTI, individually and as an
officer and director of The Primate Sanctuary, Inc.,
and THE PRIMATE SANCTUARY, INC.,

Respondents.

**AFFIDAVIT OF
TETSURO MATSUZAWA**

Index No.:

COUNTRY OF INDIA

STATE OF MAHARASHTRA

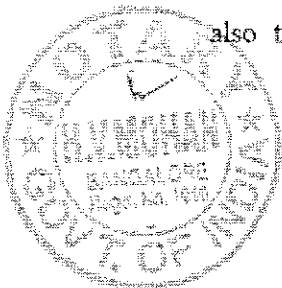
CITY OF PUNE

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Tetsuro Matsuzawa being duly sworn, deposes and says:

Introduction and Qualifications

1. My name is Tetsuro Matsuzawa. I reside and work in Kyoto, Japan. I was awarded a Ph.D. in Science from Kyoto University in 1986.
2. I submit this affidavit in support of Petitioners The Nonhuman Rights Project, Inc. ("NhRP"), on behalf of Kiko, for a writ of habeas corpus. I am a non-party to this proceeding.
3. I am currently a Full Professor of Language and Intelligence at Kyoto University and was the Director of the Primate Research Institute of Kyoto University in 2006-2012. I am also the Director of the Center for International Collaboration and Advanced Studies in



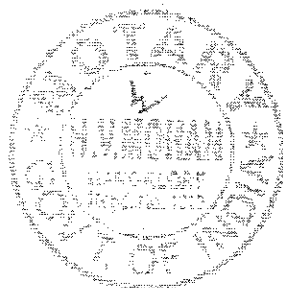
Primatology at Kyoto University, which promotes scientific research across disciplines and collaborators.

4. I am currently President of the *International Primatological Society*. I sit on the editorial board of *The Royal Society, Philosophical Transactions B*, and am the Chair of the Scientific Program for the 2016 *International Congress of Psychology*. I am the recipient of several professional honors including the Prince Chichibu Memorial Award for Science in 1991 and the Jane Goodall Award in 2001.

5. My specialization is in chimpanzee intelligence both in the wild and in the laboratory. I have studied tool use in wild chimpanzees in West Africa (Bosson-Nimba, Guinea) since 1986 and have been Director of the on-going laboratory study of captive chimpanzees known as the "Ai-project" since 1978. The "Ai-project" focuses upon language-like skills and the understanding of numbers in a female chimpanzee named Ai, her son Ayumu and three generations of chimpanzees constituting one of the longest-running laboratory research projects on chimpanzee intelligence. This combination of field and laboratory studies provides me with a uniquely comprehensive and in-depth view of chimpanzee intelligence.

6. I have written or co-edited 4 books including: *Primate Origins of Human Cognition and Behavior* (2001, Springer), *Cognitive Development in Chimpanzees* (2006, Springer), *The Mind of the Chimpanzee: Ecological and Experimental Perspectives* (2010, University Of Chicago Press), and *The Chimpanzees of Bosson and Nimba* (2011, Springer).

7. I have published 123 peer-reviewed scientific articles on cognition, intelligence, development, and welfare of chimpanzees and other primates in the world's most prominent scientific journals: *Nature*, *Proceedings of the National Academy of Sciences*, *Journal of Comparative Psychology*, *International Journal of Primatology*, *American Journal of*



Primate Biology, *Current Biology*, *Animal Cognition*, *Animal Behaviour*, *American Journal of Physical Anthropology*, among others. I have also authored and co-authored 17 book chapters. The specific topics I have researched and written about on chimpanzees include: tool-making and use, culture, memory of numerals, facial perception, caregiving, development and maturation, food sharing, handedness, gaze following, and categorization and classification of colors and objects.

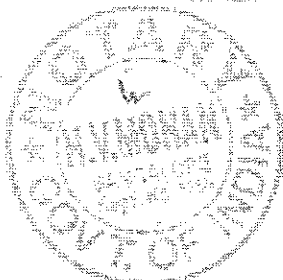
8. I have given over 58 invited talks at international venues in countries such as: Austria, China, France, Germany, Korea, Italy, Japan, Mexico, Scotland, Switzerland, the United Kingdom and the United States, among others. I continue to regularly give both local and international presentations at academic conferences, wildlife conservation meetings, and other scientific venues. My Curriculum Vitae fully sets forth my educational background and experience and is annexed hereto as "Exhibit A".

Basis for Opinions

9. The opinions I state in this Affidavit are based on my professional knowledge, education, training, and over 37 years of laboratory research and field work with chimpanzees, as well as my review of peer-reviewed literature about primatology published in the world's most respected journals, periodicals and books that are generally accepted as authoritative in the field of primatology, many of which were written by myself and colleagues with whom I have worked for many years and whose research and field work I am personally familiar with. A full reference list of peer-reviewed literature cited herein is annexed hereto as "Exhibit B".

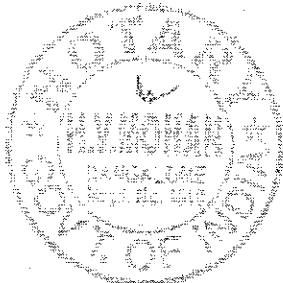
Opinions

10. As chimpanzees and humans share close to 99% of their DNA, their brains, too, are very similar (Semendeferi and Damasio, 2000). There are a number of shared characteristics in the brain that are relevant to such capacities as self-awareness and autonomy as well as



general intelligence. Both have larger brains than expected for their body size (Armstrong, 1985; Bauchot and Stephan, 1969; Bronson, 1981). This means they both evolved to possess above-average mental abilities compared with other species of the same body size. Both share similar circuits in the brain which are involved in language and communication (Gannon, Holloway, Broadfield, and Bram, 1997; Tagliabeta, Russell, Schaeffer, Hopkins, 2008; and see below). Both have evolved large frontal lobes of the brain, which are intimately involved in the capacities for insight and foreplanning (Semendeferri and Damasio, 2000). Both share a number of highly specific cell types which are thought to be involved in higher-order thinking (see below) and chimpanzee and human brains also share a number of important functional characteristics related to sense of self. Finally, both human and chimpanzee brains are similar in terms of how the brain develops and matures, indicating that chimpanzees and humans go through similar cognitive developmental stages.

11. Developmental delay (a long protracted period of brain development over many years) is a key feature of human brain evolution and is thought to play a role in the emergence of complex cognitive abilities, such as self-awareness, creativity, foreplanning, working memory, decision making and social interaction. Delayed development of the brain, and specifically the prefrontal cortex, provides a longer period in which this part of the brain may be shaped by experience and learning (Furster, 2002; Goldberg, 2002). Likewise, chimpanzee brains exhibit a very similar level of developmental delay in the prefrontal cortex, leading to the neuroanatomical basis for such high-level capacities as self-awareness, forethought, decision-making, and working memory in chimpanzees (Sakai et al., 2011; 2010). Consistent with these similar functions in humans and chimpanzees, chimpanzee infants share some common mental features and patterns with human infants (Matsuzawa, 2007). These features include the ways in which



mothers and infants interact and use social smiling and mutual gaze (looking into each other's eyes) as ways of strengthening their bond (Tomonaga et al., 2004) as well as how and when they first start to manipulate objects, which is related to their shared capacity for tool-making and use.

12. One of the hallmarks of sophisticated communication and even language-like capacities is brain asymmetry. In humans the left and right parts of the brain have different shapes which are related to language capacities. Furthermore, these brain asymmetries are correlated with handedness. That is, most humans are right-handed and process language in the left hemisphere. This is referred to as a "population-level right-handedness." Studies of the anatomy of the brain reveal that chimpanzees possess very similar patterns of asymmetry (Cantalupo and Hopkins, 2001; Dadda, Cantalupo and Hopkins, 2006; Gannon, Holloway, Broadfield and Braun, 1997). Furthermore, chimpanzees exhibit population-level right-handedness in captivity (Hopkins et al., 2010) as well as in patterns of tool use in the wild (Hunle and Matsuzawa, 2009). These overall findings point to a key similarity in the way chimpanzee and human brains are structured, particularly in ways that are relevant to language and communication.

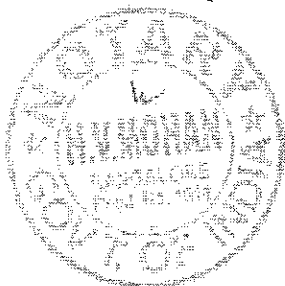
13. Language is a volitional process in humans that involves creating intentional sounds for the purpose of communication, and is, therefore, a reflection of autonomous thinking and behavior. Findings regarding functional aspects of the chimpanzee brain demonstrate volitional control over their vocalizations as well. Certain sounds are produced by chimpanzees selectively to capture the attention of an inattentive audience (Hopkins et al., 2007). These sounds are produced almost exclusively in the presence of an audience and are, therefore, under volitional control as they serve the purpose of informing others about the presence of various items, such as food or a play object or tool. Not only do chimpanzees create purposeful



vocalizations, like humans, their brain responds differently to their own name than other sounds. In a study of brain wave patterns, one captive chimpanzee, "Mizuki", showed specific brain wave responses to the sound of her own name, suggesting that this response might signify self-relevance in chimpanzees as for humans. Her name may have evoked a specific memory, emotion or mental representation (Ueno et al., 2009).

14. Further evidence for the similarity between human and chimpanzee brains comes from the finding that they both possess a specialized type of cell -- known as a spindle cell (or von Economo neuron) -- in the same area of the brain. This area, known as the anterior cingulate cortex is involved in emotional learning, the processing of complex social information, decision-making, awareness, and, in humans, speech initiation. Therefore, the presence of spindle cells in both chimpanzees (and other great apes) and humans strongly suggest they share a number of these higher-order brain functions (Allman et al., 2011; Hayashi et al., 2001).

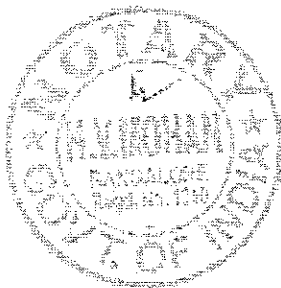
15. The concept of self is an integral part of being able to have goals and desires, intentionally act towards those goals, and the ability to understand whether they are satisfied or not. There is abundant and robust evidence that chimpanzee possess a sense of self as they have repeatedly demonstrated the ability to recognize themselves in mirrors (Gallup, 1970; Povinelli et al., 1993) and show a number of capacities which stem from being self-aware, such as metacognition, that is, the ability to think about and reflect upon one's own thoughts and memories (Beran et al., 2013; Call, 2010; Call and Carpenter, 2001). For instance, when given a task in which the identity of a food item is a critical piece of information needed to obtain a reward, chimpanzees, like humans, first check a container they are unfamiliar with before making their choice. They show efficient information-seeking behavior that strongly suggests they are aware of what they know and do not know (Beran et al., 2013). They, like human



children, also know when they have enough visual information to complete a task (Call and Carpenter, 2001), and, also know that they could be wrong about the information they have and, again like human children, will check if they are uncertain (Call, 2010). All of these abilities are related to self-monitoring and self-reflection in chimpanzees as in humans.

16. The ability to distinguish actions and effects caused by oneself from events occurring in the external environment is called "self-agency" and is a fundamental component of autonomy and purposeful behavior. Chimpanzees are able to distinguish between movement of an object, e.g., a computer cursor, controlled by themselves and motion caused by someone else. These and many other similar findings demonstrate that chimpanzees and humans share the fundamental cognitive processes underlying the sense of being an independent agent (Kaneko and Tomonaga, 2011).

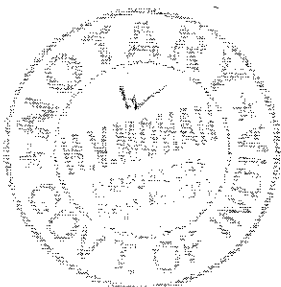
17. Not only do chimpanzees reflect upon their own thoughts and states of knowledge but they understand the mind's and experience of others. For instance, chimpanzees cannot only imitate the actions of others but anticipate the intentions of others when watching a human or another chimpanzee try to complete a task (Myowa-Yamakoshi and Matsuzawa, 2000). Chimpanzees know what others can and cannot see (Hare et al., 2000, 2001). Chimpanzees know when another's behavior is accidental or intentional (Call and Tomasello, 1998; Call et al., 2004). And chimpanzees use their knowledge of others' perceptions tactically to deceive another chimpanzee and obtain hidden food (de Waal, 2005; Hirata and Matsuzawa, 2001). In situations where two chimpanzees are in competition for hidden food they show a number of strategies and counter-strategies to throw each other "off the trail" and obtain the food for themselves (Hirata and Matsuzawa, 2001). This kind of complexity in understanding others' minds is key evidence of being aware of one's own mind and that of others, as chimpanzees clearly are.



18. Finally, chimpanzees who were shown videos of other chimpanzees yawning or just showing open-mouth facial expressions that were not yawns, showed higher levels of yawning in response to the yawn videos but not to the open-mouth displays but not the other (Anderson et al., 2004). These findings are very similar to contagious yawning effects observed in humans, and are thought to be based on the capacity for empathy, the ability to put oneself in another's situation. Contagious yawning in chimpanzees provides even further evidence that they possess very complex levels of self-awareness and empathic abilities.

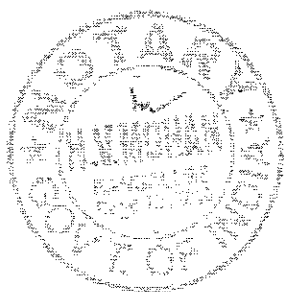
19. Numerosity, the ability to understand numbers as a sequence of quantities, requires not only sophisticated working memory (in order to keep numbers in mind) but also a conceptual understanding of a sequence, which is closely related to mental time travel (thinking about something in the future) and planning out the right sequence of steps towards a goal, two critical components of autonomy. Not only do chimpanzees excel at understanding sequences of numbers but they understand that Arabic symbols ("2", "5", etc.) represent discrete quantities, outperforming humans in some of these tasks (see below).

Sequential learning can be defined as the ability to encode and represent the order of discrete items occurring in a sequence (Conway and Christiaanson, 2001). Sequential learning is critical for human speech and language processing, the learning of action sequences, or any task that requires putting items into an ordered sequence. Chimpanzees can count or sum up arrays of real objects or Arabic numerals (Beran et al., 1998; Beran and Rumbaugh, 2001; Boysen and Berntson, 1989; Rumbaugh et al., 1987) and display the concepts of ordinality and transitivity (the logic that if $A = B$ and $B = C$, then $A = C$) when engaged in numerical tasks, demonstrating a real understanding of the ordinal nature of numbers (Boysen, Berntson, Shreyer, and Quigley, 1993). Chimpanzees also understand proportions (e.g., $1/2$, $3/4$, etc.) (Woodruff and Premack,

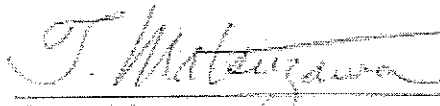


1981). Chimpanzees are able to learn to name (using a symbol-based computer keyboard) the number, color and type of object shown on the screen (Matsuzawa, 1985). They can use a computer touch screen to count from 0 to 9 in sequence (Inoue and Matsuzawa, 2007; Kawai and Matsuzawa, 2000; Tomonaga and Matsuzawa, 2000). Moreover, they have an understanding of the concept of zero, using it appropriately in ordinal context (Biro and Matsuzawa, 2001). Moreover, chimpanzees display "indicating acts" (pointing, touching, rearranging) similar to what human children display when counting up a sum. So just as human children touch each item when counting an array of items, chimpanzees do the same thing, suggesting further similarity in the way numbers and sequences are conceptualized in chimpanzees and humans (Boysen, Bernston, Shreyer, and Hamman, 1995).

20. Not only do chimpanzees understand numbers and sequences, but their working memory of numbers is superior to that of adult humans. Working memory (or, short-term memory) is the ability to temporarily store, manipulate and recall items (numbers, objects, names, etc.). In other words, working memory has to do with how good someone is at keeping several items in mind at the same time. Working memory tasks require monitoring (i.e., manipulation of information or behaviors) as part of completing goal-directed actions in the setting of interfering processes and distractions. The cognitive processes needed to achieve this include attention and executive control (reasoning, planning and execution). Chimpanzees were shown the numerals 1-9 spread randomly across a computer screen. The numbers appeared for a very limited duration (210, 430 and 650 milliseconds and then were replaced by white squares, which had to be touched in the correct order (1-9). To complicate matters, in another version of the task, as soon as the chimpanzees touched the number 1, the remaining either were immediately masked by white squares. In order to successfully complete the task they had to

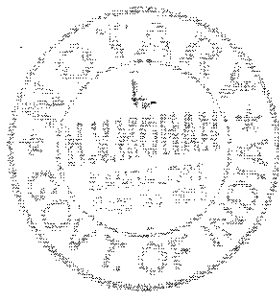


remember the location of each concealed number and touch them in the correct order. The performance of a number of the chimpanzees on these seemingly impossible memory tasks was not only accurate but much better than that of human adults, who could not even complete most of the versions of the task (Inoue and Matsuzawa, 2007). Therefore, the chimpanzees have an extraordinary working memory capability for numerical recollection better than that of adult humans, which underlies a number of mental skills related to mental representation, attention, and sequencing.

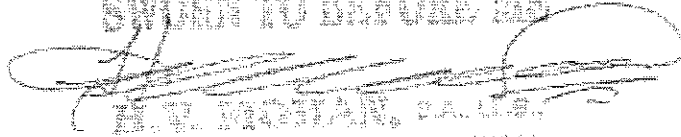

Tetsuro Matsuzawa

Sworn to before me
this 23 day of November, 2013

123 NOV 2013
Notary Public



SWORN TO BEFORE ME


H. S. NOTARY, P.A. (S),
NOTARY PUBLIC, GOVT. OF INDIA
100A, 2nd Floor, N.E. Layout,
Koramangala, Bangalore - 560 042.

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EXHIBIT A

Curriculum Vitae

Tetsuro Matsuzawa

Current Position

Professor, Section of Language and Intelligence,
Director, Center for International Collaboration and Advanced
Studies
Primate Research Institute, Kyoto University
President of the International Primatological Society
Editorial Board of The Royal Society, *Philosophical Transaction B*
Chair of Scientific Program of International Congress of Psychology 2016



Birth day: 15th Oct. 1950, born in Japan (Nationality: Japanese)

1969: Entered Kyoto University (Philosophy major)

1974: Graduated the Faculty of Letters, Kyoto University; Entered Graduate School of Kyoto University (Psychology major): PhD (Science) from Kyoto University in 1986

1976-present: Primate Research Institute of Kyoto University

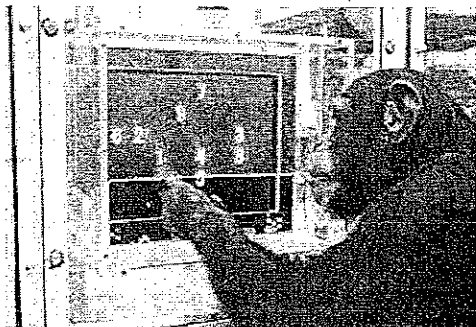
(1976: Assistant professor, 1987: Associate professor, 1993: full professor, 2006-2012: Director)

Major: Primatology, Psychology, especially establishing "Comparative Cognitive Science"

Research Summary

Matsuzawa has been studying chimpanzee intelligence both in the laboratory and in the wild. The laboratory work is known as "Ai-project" since 1976. He has also been studying the tool use in the wild chimpanzees at Bossou-Nimba, Guinea, West Africa, since 1986. Matsuzawa tries to synthesize the field and the lab work to understand the nature of chimpanzees. He published journal papers and also the books such as "Primate origins of human cognition and behavior", "Cognitive development in chimpanzees", "The chimpanzees of Bossou and Nimba". He also published several popular books to the public too, that have been translated into Chinese and Korean. He got several prizes including Prince Chichibu Memorial Award for Science in 1991, Jane Goodall Award in 2001, and The Medal with Purple Ribbon in 2004.

Please see the web site: <http://www.pri.kyoto-u.ac.jp/ai/>



Publications list

Books

- Matsuzawa T, Humle, T & Sugiyama, Y (2011) *The Chimpanzees of Bossou and Nimba*. Springer.
- Lonsdorf, E, Ross, S & Matsuzawa T (2010) *The mind of the chimpanzee: Ecological and experimental perspectives*. The University of Chicago Press.
- Matsuzawa T, Tomonaga M, Tanaka M (2006) *Cognitive Development in Chimpanzees*, Springer.
- Matsuzawa T (2001) *Primate origins of human cognition and behavior*, Springer-Verlag.

Papers (Reviewed academic journal paper)

- Hattori Y, Tomonaga M, Matsuzawa T (2013) Spontaneous synchronized tapping to an auditory rhythm in a chimpanzee. *Scientific Reports*, 3 : 1566 | DOI: 10.1038/srep01566, 28 Mar 2013
- Matsuzawa T (2013) Evolution of the brain and social behavior in chimpanzees. *Current opinion in Neurobiology*. 23:443–449 <http://dx.doi.org/10.1016/j.conb.2013.01.012>
- Sakai T, Matsui M, Mikami A, Malkova L, Hamada Y, Suzuki J, Tanaka M, Miyabe-Nishiwaki T, Makishima H, Nakatsukasa M, Matsuzawa T (2013) Developmental patterns of chimpanzee cerebral tissues provide important clues for understanding the remarkable enlargement of the human brain. *Proceedings in the Royal Society B*, 280: 20122398.
- Koops K, McGrew WC. , Matsuzawa T (2013) Ecology of culture: do environmental factors influence foraging tool use in wild chimpanzees, *Pan troglodytes verus*? *Animal Behaviour*, 85, 175-185.
- Matsuzawa T (2012) GRASP in Paris 2012. *Pan Africa News*, 19(2): 15-16
- Weiss A, King JE. , Inoue-Murayama M, Matsuzawa T, Oswald AJ. (2012) Evidence for a midlife crisis in great apes consistent with the U-shape in human well-being. *Proceedings of the National Academy of Sciences*, 109, 19949-19952.
- Carvalho S, Biro D, Cunha E, Hockings KJ. , McGrew WC. , Richmond.BG. , Matsuzawa T (2012) Chimpanzee carrying behaviour and the origins of human bipedality. *Current Biology*, 22, R180-R181
- Hockings KJ. , Anderson JR. , Matsuzawa T (2012) Socioecological adaptations by chimpanzees, *Pan troglodytes verus*, inhabiting an anthropogenically impacted habitat *Animal Behaviour*, 83, 801-810
- Hockings KJ. , Humle T, Carvalho S, Matsuzawa T (2012) Chimpanzee interactions with nonhuman species in an anthropogenic habitat. *Behaviour*, 149, 299 – 324

- Koops K, McGrew WC. , Matsuzawa T, Knapp LA. (2012) Terrestrial Nest-Building by Wild Chimpanzees (*Pan troglodytes*): Implications for the tree-to-ground sleep transition in early hominins. *American Journal Of Physical Anthropology*, 148, 351–361
- Koops K, McGrew WC. , Vries Hde , Matsuzawa T (2012) Nest-building by chimpanzees (*Pan troglodytes verus*) at Seringbara, Nimba Mountains: Antipredation, thermoregulation, and antivector hypotheses. *International Journal of Primatology*, 33, 356–380
- Kooriyama T, Okamoto M, Yoshida T, Nishida T, Tsubota T, Saito A, Tomonaga M, Matsuzawa T, Akari H, Nishimura H, Miyabe-Nishiwaki T (2012) Epidemiological study of zoonoses derived from humans in captive Chimpanzees *Primates*,
- Ogura T, Matsuzawa T, (2012) Video preference assessment and behavioral management of single-caged Japanese macaques (*Macaca fuscata*) by movie presentation. *Journal of Applied Animal Welfare Science*, 15, 101–112
- Weiss A, Inoue-Murayama M, King JE , Adams MJ , Matsuzawa T (2012) All too human? Chimpanzee and orang-utan personalities are not anthropomorphic projections. *Animal Behaviour*, 83: 1355–1365
- Inoue S, Matsuzawa T (2011) Correlation between menstrual cycle and cognitive performance in a chimpanzee (*Pan troglodytes*). *Journal of Comparative Psychology*, 125: 104–11
- Ludwig VU , Adachi I, Matsuzawa T (2011) Visuoauditory mappings between high luminance and high pitch are shared by chimpanzees (*Pan troglodytes*) and humans. *Proc Natl Acad Sci U S A.*, published ahead of print December 5, 2011
- Martin CF , Biro D, Matsuzawa T (2011) Chimpanzees' use of conspecific cues in matching-to-sample tasks: public information use in a fully automated testing environment *Animal Cognition*, 14, 893–902
- Morimura N, Idani G, Matsuzawa T (2011) The first chimpanzee sanctuary in Japan: an attempt to care for the “surplus” of biomedical research. *American Journal of Primatology*, 73, 226–232
- Ohashi G, Matsuzawa T (2011) Deactivation of snares by wild chimpanzees. *Primates*, 52, 1–5
- Sakai T, Mikami A, Tomonaga M, Matsui M, Suzuki J, Hamada Y, Tanaka M, Miyabe-Nishiwaki T, Makishima H, Nakatsukasa M, Matsuzawa T (2011) Differential prefrontal white matter development in chimpanzees and humans. *Current Biology*, 21, 1397–1402
- Biro D, Humle T, Koops K, Sousa C, Hayashi M, Matsuzawa T (2010) Chimpanzee mothers at Bossou, Guinea carry the mummified remains of their dead infants. *Current Biology*, 20, R351–R352
- Carvalho S, Yamanashi Y, Yamakoshi G, Matsuzawa T (2010) Bird in the hand: Bossou chimpanzees (*Pan troglodytes*) capture West African wood-owls (*Ciccaba woodfordi*) but not to eat. *Pan Africa News*, 17(1), 6–9

- Fujisawa M, Matsubayashi K, Soumah AGaspard, Kasahara Y, Nakatsuka M, Matsuzawa T (2010) Farsightedness (presbyopia) in a wild elderly chimpanzee: The first report. *Geriatrics & Gerontology International*, 10, 113-114
- Hirata S, Yamamoto S, Takemoto H, Matsuzawa T (2010) A case report of meat and fruit sharing in a pair of wild bonobos. *Pan Africa News*, 17(2), 21-23
- Hockings KJ., Anderson JR., Matsuzawa T (2010) Flexible feeding on cultivated underground storage organs by rainforest-dwelling chimpanzees at Bossou, West Africa. *Journal of Human Evolution*, 58, 227-233
- Hockings KJ., Yamakoshi G, Kabasawa A, Matsuzawa T (2010) Attacks on local persons by chimpanzees in Bossou, Republic of Guinea: long-term perspectives. *American Journal of Primatology*, 72:887-896
- Koops K, McGrew WC., Matsuzawa T (2010) Do chimpanzees (*Pan troglodytes*) use cleavers and anvils to fracture *Treculia africana* fruits? Preliminary data on a new form of percussive technology. *Primates*, 51, 175-178.
- Miyabe-Nishiwaki T, Kaneko A, Nishiwaki K, Watanabe A, Watanabe S, Maeda N, Kumazaki K, Morimoto M, Hirokawa R, Suzuki J, Ito Y, Hayashi M, Tanaka M, Tomonaga M, Matsuzawa T (2010) Tetraparesis resembling acute transverse myelitis in a captive chimpanzee (*Pan troglodytes*): long-term care and recovery. *Journal of Medical Primatology*, 39, 336-346.
- Sakai T, Hirai D, Mikami A, Suzuki J, Hamada Y, Tomonaga M, Tanaka M, Miyabe-Nishiwaki T, Makishima H, Nakatsukasa M, Matsuzawa T (2010) Prolonged maturation of prefrontal white matter in chimpanzees. *Nature Precedings*, 4411.1.
- Yamanashi Y, Matsuzawa T (2010) Emotional consequences when chimpanzees (*Pan troglodytes*) face challenges: individual differences in self-directed behaviours during cognitive tasks *Animal Welfare*, 19, 25-30
- Adachi I, Kuwahata H, Fujita K, Tomonaga M, Matsuzawa T (2009) Plasticity of ability to form cross-modal representations in infant Japanese macaques. *Developmental Science*, 12, 446-452
- Carvalho S, Biro D, McGrew WC., Matsuzawa T (2009) Tool-composite reuse in wild chimpanzees (*Pan troglodytes*): Archaeologically invisible steps in the technological evolution of early hominins? *Animal Cognition*, 12, S103-S114
- Crast J, Frigaszy D, Hayashi M, Matsuzawa T (2009) Dynamic in-hand movements in adult and young juvenile chimpanzees (*Pan troglodytes*). *American Journal of Physical Anthropology*, Volume 138, Issue 3, pages 274-285
- Haslam M, Hernández-Aguilar A, Ling V, Carvalho S, Torre Ide-la, DeStefano A, Du A, Hardy B, Harris J, Marchant L, Matsuzawa T, McGrew W, Mercader J, Mora R, Petraglia M, Roche H, Visalberghi E, Warren R (2009) Primate archaeology *Nature*, 460, 339-344
- Hockings KJ., Anderson JR., Matsuzawa T (2009) Use of Wild and Cultivated Foods by Chimpanzees at Bossou, Republic of Guinea: Feeding dynamics in a human-influenced environment. *American Journal of Primatology*, 71, 636-646

- Humle T, Matsuzawa T (2009) Laterality in hand use across four tool-use behaviors among the wild chimpanzees of Bossou, Guinea, West Africa. *American Journal of Primatology*, 70, 40-48.
- Humle T, Snowdon CT., Matsuzawa T (2009) Social influences on ant-dipping acquisition in the wild chimpanzees (*Pan troglodytes verus*) of Bossou, Guinea, West Africa. *Animal Cognition*, 12, S37-S48.
- Inoue S, Matsuzawa T (2009) Acquisition and memory of sequence order in young and adult chimpanzees (*Pan troglodytes*). *Animal Cognition*, 12, S59-S69.
- Martinez L, Matsuzawa T (2009) Visual and auditory conditional position discrimination in chimpanzees (*Pan troglodytes*). *Behavioural Processes*, 82, 90-94.
- Martinez L, Matsuzawa T (2009) Auditory-visual intermodal matching based on individual recognition in a chimpanzee (*Pan troglodytes*). *Animal Cognition*, 12, S71-S85
- Martinez L, Matsuzawa T (2009) Effect of species-specificity in auditory-visual intermodal matching in a chimpanzee (*Pan troglodytes*) and humans. *Behavioural Processes*, 82, 160-163
- Matsuzawa T (2009) Symbolic representation of number in chimpanzees. *Current Opinion in Neurobiology*, 19:92-98
- Matsuzawa T (2009) Q&A: Tetsuro Matsuzawa. *Current Biology*, 19, R310-R312
- Matsuzawa T (2009) The chimpanzee mind: in search of the evolutionary roots of the human mind. *Animal Cognition*, 12, S1-S9
- Poti P, Hayashi M, Matsuzawa T (2009) Spatial construction skills of chimpanzees (*Pan troglodytes*) and young human children (*Homo sapiens sapiens*). *Developmental Science*, 12, 536-548
- Weiss A, Inoue-Murayama M, Hong K, Inoue E, Udono T, Ochiai T, Matsuzawa T, Hirata S, King JE. (2009) Assessing chimpanzee personality and subjective well-being in Japan. *American Journal of Primatology*, 71, 283-292
- Carvalho S, Cunha E, Sousa C, Matsuzawa T (2008) Chaînes opératoires and resource-exploitation strategies in chimpanzee (*Pan troglodytes*) nut cracking. *Journal of Human Evolution*, 55, 148-163
- Matsuzawa T, McGrew WC. (2008) Kinji Imanishi and 60 years of Japanese Primatology. *Current Biology*, 18(14), R587-R591
- Möbius Y, Boesch C, Koops K, Matsuzawa T, Humle T (2008) Cultural differences in army ant predation by West African chimpanzees? A comparative study of microecological variables. *Animal Behaviour*, 76, 37-45
- Ohashi G, Hasegawa R, Makan K, Matsuzawa T (2008) Arbors and cuttings: New trials for Green Corridor Project at Bossou-Nimba. *Pan Africa News*, 15(2): 20-23
- Okamoto-Barth S, Tomonaga M, Tanaka M, Matsuzawa T (2008) Development of using experimenter-given cues in infant chimpanzees: Longitudinal changes in behavior and cognitive development. *Developmental Science*, 11(1), 98-108.

- Yamamoto S, Yamakoshi G, Humle T, Matsuzawa T (2008) Invention and modification of a new tool use behavior: Ant-fishing in trees by a wild chimpanzee (*Pan troglodytes verus*) at Bossou, Guinea. *American Journal of Primatology*, 70, 699-702.
- Carvalho S, Sousa C, Matsuzawa T (2007) New Nut-Cracking Sites in Diecké Forest, Guinea: An Overview of the Surveys. *Pan Africa News*, 14 (1), 11-13
- Granier N, Marie-Claude H, Matsuzawa T (2007) Preliminary surveys of chimpanzees in Gouéla area and Déré Forest, the Nimba Mountain Biosphere Reserve, Republic of Guinea. *Pan Africa News*, 14(2), 20-22
- Hockings KJ. , Humle T, Anderson JR. , Biro D, Sousa C, Ohashi G, Matsuzawa T (2007) Chimpanzees share forbidden fruit. *PLoS ONE*, 2(9): e886
- Inoue S, Matsuzawa T (2007) Working memory of numerals in chimpanzees. *Current Biology*, Volume 17, Issue 23, R1004-R1005
- Koops K, Humle T, Sterck E, Matsuzawa T (2007) Ground-nesting by the chimpanzees of the Nimba Mountains, Guinea: Environmentally or socially determined? *American Journal of Primatology*, 69, 407-419
- Matsuzawa T (2007) Assessment of the planted trees in Green Corridor Project. *Pan Africa News*, 14(2), 27-29
- Matsuzawa T (2007) Comparative cognitive development. *Developmental Science*, 10, 97-103
- Nishimura T, Mikami A, Suzuki J, Matsuzawa T (2007) Development of the Laryngeal Air Sac in Chimpanzees *International Journal of Primatology*, Volume 28, Number 2, 483-492
- Thompson ME. , Jones JH. , Pusey AE. , Marsden SBrewer , Goodall J, Marsden D, Matsuzawa T, Nishida T, Reynolds V, Sugiyama Y, Wrangham RW. (2007) Aging and fertility patterns in wild chimpanzees provide insights into the evolution of menopause. *Current Biology*, 17, 2150-2156
- Uenishi G, Fujita S, Ohashi G, Kato A, Yamauchi S, Matsuzawa T, Ushida K (2007) Molecular analyses of the intestinal microbiota of chimpanzees in the wild and in captivity. *American journal of Primatology*, 69: 367-376
- Uenishi G, Fujita S, Ohashi G, Kato A, Yamauchi S, Matsuzawa T, Ushida K (2007) Molecular analysis of the intestinal microbiota of chimpanzees in the wild and in captivity. *American journal of Primatology*, 69: 1-10
- Adachi I, Kuwahata H, Fujita K, Tomonaga M, Matsuzawa T (2006) Japanese macaques form a cross-modal representation of their own species in their first year of life. *Primates*, 47, 350-354
- Hockings KJ. , Anderson JR. , Matsuzawa T (2006) Road crossing in chimpanzees: a risky business. *Current Biology*, Vol 16 No 17, 668-670
- Koops K, Matsuzawa T (2006) Hand Clapping by a Chimpanzee in the Nimba Mountains, Guinea, West Africa. *Pan Africa News*, 13(2)19-21
- Matsuzawa T (2006) Bossou 30 years. *Pan Africa News*, 13, 16-18

- Mizuno Y, Takeshita H, Matsuzawa T (2006) Behavior of infant chimpanzees during the night in the first 4 months of life: smiling and suckling in relation to behavioral state. *Infancy*, 9(2): 215-234
- Nishimura T, Mikami A, Suzuki J, Matsuzawa T (2006) Descent of the hyoid in chimpanzees: evolution of facial flattening and speech. *Journal of Human Evolution*, 51(3): 244-254
- Bard K.A., Myowa-Yamakoshi M, Tomonaga M, Tanaka M, Costall A, Matsuzawa T (2005) Group differences in the mutual gaze of chimpanzees (*Pan troglodytes*). *Developmental Psychology*, 41: 616-624
- Hayashi M, Mizuno Y, Matsuzawa T (2005) How does stone-tool use emerge? Introduction of stones and nuts to naive chimpanzees in captivity. *Primates*, 46(2): 91-102.
- Matsuzawa T (2005) Primate viewing. *Nature*, 434, 21-22.
- Murai C, Kosugi D, Tomonaga M, Tanaka M, Matsuzawa T, Itakura S (2005) Can chimpanzee infants (*Pan troglodytes*) form categorical representations in the same manner as human infants (*Homo sapiens*)? *Developmental Science*, 8:3, pp 240-254
- Myowa-Yamakoshi M, Yamaguchi M.K., Tomonaga M, Tanaka M, Matsuzawa T (2005) Development of face recognition in infant chimpanzees (*Pan troglodytes*). *Cognitive Development*, 20, 49-63
- Takeshita H, Frigaszy D, Mizuno Y, Matsuzawa T, Tomonaga M, Tanaka M (2005) Exploring by doing: How young chimpanzees discover surfaces through actions with objects. *Infant Behavior & Development*, 28, 316-328
- Ueno A, Matsuzawa T (2005) Response to novel food in infant chimpanzees: Do infants refer to mothers before ingesting food on their own? *Behavioural Processes*, 68(1):85-90
- Anderson J.R., Myowa-Yamakoshi M, Matsuzawa T (2004) Contagious yawning in chimpanzees. *Proc Biol Sci.*, 271(Suppl 6): S468-S470
- Biro D, Inoue-Nakamura N, Tonooka R, Yamakoshi G, Sousa C, Matsuzawa T (2004) Cultural innovation and transmission of tool use in wild chimpanzees: evidence from field experiments *Animal Cognition*, Volume 6, Number 4, 213-223
- Humle T, Matsuzawa T (2004) Oil Palm Use by Adjacent Communities of Chimpanzees at Bossou and Nimba Mountains, West Africa. *International Journal of Primatology*, Vol. 25, No. 3, 551-581
- Humle T, Matsuzawa T, Yamakoshi G (2004) Chimpanzee conservation and environmental education in Bossou and Nimba, Guinea, West Africa. *Folia Primatologica*, 75(S1):280-281
- Kuwahata H, Adachi I, Fujita K, Tomonaga M, Matsuzawa T (2004) Development of schematic face preference in macaque monkeys. *Behavioural Processes*, 66, 17-21
- Matsuno T, Kawai N, Matsuzawa T (2004) Color classification by chimpanzees (*Pan troglodytes*) in a matching-to-sample task. *Behavioural Brain Research*, 148, 157-165
- Myowa-Yamakoshi M, Tomonaga M, Tanaka M, Matsuzawa T (2004) Imitation in neonatal chimpanzees (*Pan troglodytes*). *Developmental Science*, 7:4, pp 437-442

- Tomonaga M, Tanaka M, Matsuzawa T, Myowa-Yamakoshi M, Kosugi D, Mizuno Y, Okamoto S, Yamaguchi MK. , Bard KA. (2004) Development of social cognition in infant chimpanzees (*Pan troglodytes*): Face recognition, smiling, gaze, and the lack of triadic interactions. *Japanese Psychological Research*, Volume 46, Issue 3, pages 227-235
- Ueno A, Matsuzawa T (2004) Food transfer between chimpanzee mothers and their infants. *Primates*, 45:231-239
- Hayashi M, Matsuzawa T (2003) Cognitive development in object manipulation by infant chimpanzees. *Animal Cognition*, 6: 225-233
- Iversen IH. , Matsuzawa T (2003) Development of interception of moving targets by chimpanzees (*Pan troglodytes*) in an automated task. *Animal Cognition*, 6 : 169-183
- Matsuzawa T (2003) The Ai project: historical and ecological contexts. *Animal Cognition*, 6(4): 199-211
- Myowa-Yamakoshi M, Tomonaga M, Tanaka M, Matsuzawa T (2003) Preference for human direct gaze in infant chimpanzees (*Pan troglodytes*). *Cognition*, 89, B53-B64
- Nishimura T, Mikami A, Suzuki J, Matsuzawa T (2003) Descent of the larynx in chimpanzee infants. *PNAS*, 100(12), 6930-6933
- Shimizu K, Douke C, Fujita S, Matsuzawa T, Tomonaga M, Tanaka M, Matsubayashi K, Hayashi M (2003) Urinary steroids, FSH and CG measurements for monitoring the ovarian cycle and pregnancy in the chimpanzee. *Journal of Medical Primatology*, Volume 32, Issue 1, pages 15-22
- Sousa C, Okamoto S, Matsuzawa T (2003) Behavioural development in a matching-to-sample task and token use by an infant chimpanzee reared by his mother *Animal Cognition*, 6 : 259-267
- Tanaka M, Tomonaga M, Matsuzawa T (2003) Finger drawing by infant chimpanzees (*Pan troglodytes*). *Animal Cognition*, 6 : 245-251
- Humle T, Matsuzawa T (2002) Ant-dipping among the chimpanzees of Bossou, Guinea, and some comparisons with other sites. *American Journal of Primatology*, 58:133-148
- Matsumoto-Oda A, Oda R, Hayashi Y, Murakami H, Maeda N, Kumazaki K, Shimizu K, Matsuzawa T (2002) Vaginal fatty acids produced by chimpanzees during menstrual cycles. *Folia Primatologica*, 74:75-79
- Okamoto S, Tomonaga M, Ishii K, Kawai N, Tanaka M, Matsuzawa T (2002) An infant chimpanzee (*Pan troglodytes*) follows human gaze. *Animal Cognition*, Volume 5, Number 2, 107-114
- Tomonaga M, Matsuzawa T (2002) Enumeration of briefly presented items by the chimpanzee (*Pan troglodytes*) and humans (*Homo sapiens*). *Animal Learning & Behavior*, 30 (2), 143-157
- Visalberghi E, Myowa-Yamakoshi M, Hirata S, Matsuzawa T (2002) Responses to novel foods in captive chimpanzees. *Zoo Biology*, 21:539-548

- Biro D, Matsuzawa T (2001) Use of numerical symbols by the chimpanzee (*Pan troglodytes*): Cardinals, ordinals, and the introduction of zero. *Animal Cognition*, 4 :193-199
- Hirata S, Matsuzawa T (2001) Tactics to obtain a hidden food item in chimpanzee pairs (*Pan troglodytes*). *Animal Cognition*, 4, 285-295.
- Hirata S, Yamakoshi G, Fujita S, Ohashi G, Matsuzawa T (2001) Capturing and toying with hyraxes (*Dendrohyrax dorsalis*) by Wild Chimpanzees (*Pan troglodytes*) at Bossou, Guinea. *American Journal of Primatology*, 53, 93-97
- Humle T, Matsuzawa T (2001) Behavioural diversity among the wild chimpanzee populations of Bossou and neighbouring areas, Guinea and Côte d'Ivoire, West Africa. *Folia Primatologica*, 72:57-68
- Iversen IHL, Matsuzawa T (2001) Acquisition of navigation by chimpanzees (*Pan troglodytes*) in an automated fingermaze task. *Animal Cognition*, 4 :179-192
- Kawai N, Matsuzawa T (2001) "Magical number 5" in a chimpanzee. *Behavioral and Brain Sciences*, 24: 127-128
- Matsuzawa T, Tomonaga M (2001) For a rise of comparative cognitive science. *Animal Cognition*, 4: 133-135
- Morimura N, Matsuzawa T (2001) Memory of movies by chimpanzees (*Pan troglodytes*). *Journal of Comparative Psychology*, 115: 152-158
- Sousa C, Matsuzawa T (2001) The use of tokens as rewards and tools by chimpanzees (*Pan troglodytes*). *Animal Cognition*, 4 :213-221
- Kawai N, Matsuzawa T (2000) Numerical memory span in a chimpanzee *Nature*, 403, 39-40
- Kawai N, Matsuzawa T (2000) A conventional approach to chimpanzee cognition: Response to M.D.Hauser (2000). *Trends in Cognitive Sciences*, (4):128-129
- Myowa-Yamakoshi M, Matsuzawa T, (2000) Imitation of intentional manipulatory actions in chimpanzees (*Pan troglodytes*). *Journal of Comparative Psychology*, 114: 381-391
- Tomonaga M, Matsuzawa T (2000) Sequential responding to arabic numerals with wild cards by the chimpanzee (*Pan troglodytes*). *Animal Cognition*, 3 :1-11
- Tsuji K, Hayashibe K, Hara M, Matsuzawa T (2000) Visuo-motor development which causes detection of visual depth from motion and density cues. *Swiss Journal of Psychology*, 59(2): 102-107
- Hirata S, Morimura N, Matsuzawa T (1998) Green passage plan (tree-planting project) and environmental education using documentary videos at Bossou: a progress report. *Pan Africa News*, 5:18-20
- Hirata S, Myowa M, Matsuzawa T (1998) Use of leaves as cushions to sit on wet ground by wild chimpanzees. *American Journal of Primatology*, 44:215-220
- Tonooka R, Tomonaga M, Matsuzawa T (1997) Acquisition and transmission of tool making and use for drinking juice in a group of captive chimpanzees (*Pan troglodytes*). *Japanese Psychological Research*, 39, 253-265

- Tomonaga M, Itakura S, Matsuzawa T (1993) Superiority of conspecific faces and reduced inversion effect in face perception by a chimpanzee (*Pan troglodytes*). *Folia Primatologica*, 61, 110-114
- Tomonaga M, Matsuzawa T (1992) Perception of complex geometric figures in chimpanzees (*Pan troglodytes*) and humans (*Homo sapiens*): Analyses of visual similarity on the basis of choice reaction time. *Journal of Comparative Psychology*, 106, 43-52
- Tomonaga M, Matsuzawa T, Fujita K, Yamamoto I, (1991) Emergence of symmetry in a visual conditional discrimination by chimpanzees (*Pan troglodytes*). *Psychological Reports*, 68, 51-60
- Matsuzawa T (1990) Form perception and visual acuity in a chimpanzee. *Folia Primatologica*, 55, 24-32
- Matsuzawa T, Sakura O, Kimura T, Hamada Y, Sugiyama Y (1990) Case report on the death of a wild chimpanzee (*Pan troglodytes verus*). *Primates*, 31, 635-641
- Matsuzawa T (1985) Use of numbers by a chimpanzee. *Nature*, 315, 57 - 59
- Matsuzawa T (1985) Colour naming and classification in a chimpanzee (*Pan troglodytes*). *Journal of Human Evolution*, 14, 283-291
- Asano T, Kojima T, Matsuzawa T, Kubota K, Murofushi K (1982) Object and color naming in chimpanzees (*Pan troglodytes*). *Proceedings of the Japan Academy, Series B*, 58, 118-122

Book chapters

- Matsuzawa T (2010) A trade-off theory of intelligence. In: Mareschal, D et al. (eds.), *The making of human concepts*. Pp. 227–245, Oxford University Press.
- Matsuzawa T & Kourouma, M (2008) The green corridor project: Long-term research and conservation in Bossou, Guinea. In: Wrangham, R & Ross, E (eds.), *Science and conservation in African forests: The benefits of long-term research*. Pp. 201–212, Cambridge University Press.
- Matsuzawa T, Nakamura, M (2004) Caregiving: mother-infant relations in chimpanzees. In: M. Bekoff (ed.) *Encyclopedia of animal behavior*, Pp.196-203, Greenwood Press.
- Matsuzawa T (2002) Chimpanzee Ai and her son Ayumu: An episode of education by master-apprenticeship. In: M. Bekoff, C. Allen, & Burghardt, G. (eds.) *The cognitive animal* Pp.189-195, Cambridge: The MIT Press
- Matsuzawa, T (2001) Primate foundations of human intelligence: A view of tool use in nonhuman primates and fossil hominids. In: *Primate origins of human cognition and behavior*, T. Matsuzawa ed., Pp. 3-25, Tokyo: Springer-Verlag
- Matsuzawa T, Biro, D., Humle, T., Inoue-Nakamura, N., Tonooka, R. & Yamakoshi, G. (2001) Emergence of culture in wild chimpanzees: Education by master-apprenticeship. In: *Primate origins of human cognition and behavior*, T. Matsuzawa ed., Pp.557-574, Tokyo: Springer-Verlag.

- Matsuzawa T (1999) Communication and tool use in chimpanzee: Cultural and social contexts. In: Hauser, M. & Konishi, M. eds., *The design of Animal communication*, Pp.645-671, Cambridge University Press.
- Matsuzawa T (1998) Chimpanzee behavior: comparative cognitive perspective. In: Greenberg, G. & Haraway, M. eds., *"Comparative psychology: A handbook"*, Garland Publishers Inc., NY, 360-375.
- Matsuzawa T & Yamakoshi, G. (1996) Comparison of chimpanzee material culture between Bossou and Nimba, West Africa. In Russon, A., Bard, K., & Parker, S. (eds.), *"Reaching into thought"*. Cambridge Univ. Press, 211-232.
- Matsuzawa T (1996) Chimpanzee intelligence in nature and in captivity: isomorphism of symbol use and tool use. In McGrew, W. et al. (eds.), *"Great Ape Societies"*. Cambridge Univ. Press, 196-209.
- Matsuzawa T (1994) Field experiments on use of stone tools by chimpanzees in the wild. In Wrangham, R. et al.(eds.), *"Chimpanzee Cultures"*. Harvard Univ. Press, 351-370.
- Itakura, S., & Matsuzawa,T. (1993) Acquisition of personal pronouns by a chimpanzee. Roitblat, H.,Herman, L., Nachtigall, P. (eds.), *"Language and Communication: Comparative Perspectives"*. Lawrence Erlbaum, 347-363.
- Tomonaga, M., Matsuzawa T, & Matano, S. (1991) Perception and processing of complex geometrical figures in chimpanzee (*Pan troglodytes*). In Ehara, A., Kimura, T., Takenaka, O., and Iwamoto, M. (Eds.), *"Primateology today"*. Elsevier: Amsterdam, 313-316.
- Matsuzawa T (1991) The duality of language-like skill in a chimpanzee (*Pan troglodytes*). In Ehara, A., Kimura, T., Takenaka, O., and Iwamoto, M. (Eds.), *"Primateology today"*. Elsevier: Amsterdam, 317-320.
- Matsuzawa T (1990) Spontaneous sorting in human and chimpanzee. In Parker, S. and Gibson, K. (Eds.), *"Language and intelligence in monkeys and apes: Comparative developmental perspectives"*. Cambridge University Press, 451-468.
- Matsuzawa T (1989) Spontaneous pattern construction in a chimpanzee. In Heltne, P. and Marquardt, L. (Eds.), *"Understanding chimpanzees"*. Harvard University Press, 252-265.
- Matsuzawa T, Asano, T., Kubota, K., & Murofushi, K. (1986) Acquisition and Generalization of numerical labeling by a chimpanzee. In D.M.Taub and F.A.,King (Eds.), *"Current perspectives in primate social dynamics"*. Van Nostrand Reinhold: New York.

Invited talks (2004-2013)

2013

1) Conakry University, Jan 4, Conakry, Guinea

2) AAAS, Feb 15, Boston, USA

3) Malaysia Science University, Department of Biology, March 5, Penang, Malaysia

- 4) Malaysia Science University, Department of Education, March 6, Penang, Malaysia
- 5) Kunming University of Science and Technology, March 24, Kunming, Yunnan, China
- 6) Kunming Institute of Zoology, March 25, Kunming, Yunnan, China
- 7) Southwest Forestry University, Kunming, Yunnan, China
- 8) Yunnan University of Finance and Economics, March 26, Kunming, Yunnan, China
- 9) Royal University of Bhutan, May, May 5, Thimpu, Bhutan
- 10) Archives Jean Piaget, University of Geneva, May 14, Geneva, Switzerland
- 11) University of Neuchatel, May 15, Neuchatel, Switzerland
- 12) University of St Andrews, May 20, St Andrews, Scotland, UK

2012

- 1) American Psychological Association, Aug 2, Florida, USA
- 2) International Primatological Society, Aug 15, Cancun, Mexico
- 3) President plenary, International Primatological Society, Aug 16, Cancun, Mexico
- 4) University Autonoma Metropolitana-Iztapalapa, Aug 20, Mexico City, Mexico
- 5) Ecole Normale Supérieure, Nov 5, Paris, France
- 6) Le Muséum national d'Histoire naturelle, Nov 8, Paris, France
- 7) International Institute of Advanced Studies, Dec 8, Tokyo, Japan

2011

- 1) Malaysia Science University, Department of Biology, Feb 17, Penang, Malaysia
- 2) Borneo Rainforest Lodge, Malaysia-Sabah University, March 26, Danum Valley, Malaysia
- 3) Harvard University Dept of Psychology and Dept of Anthropology, April 27, Boston, USA
- 4) New York Consortium for Primatology, April 28, New York, USA
- 5) New York City University, April 29, New York, USA
- 6) University of Pennsylvania, Department of Psychology, May 2, Philadelphia, PA, USA
- 7) UCL, Institute of Child Health, May 17, London, UK
- 8) Cambridge University, Department of Anthropology and Archaeology, May 18, Cambridge, UK
- 9) Tamagawa-CALTEC joint symposium on Neuroscience, June 7, Kyoto, Japan
- 10) Association for the Scientific Study of Consciousness (ASSC15), June 12, Kyoto, Japan
- 11) Nairobi Workshop on Lithic Technology, Nairobi National Museum, Aug 6, Nairobi, Kenya
- 12) Wellcome Trust School on Biology of Social Cognition, Cambridge, UK
- 13) Ecole Normale Supérieure, Paris, France

2010

- 1) i-Brain symposium, University of Ghent, March 6, Brussels, Belgium
- 2) Seoul National Zoo, April 28, Seoul, Korea
- 3) Ewha Womans University, April 29, Seoul, Korea
- 4) UCL, Birkbeck and Institute of Cognitive Neuroscience, May 18, London, UK
- 5) Cold Spring Harbor Laboratory School on Biology of Social Cognition, July 15, CSHL, NY,

USA

- 6) International Society for the Study of Behavioral Development (ISSBD), July 21, Lusaka, Zambia
- 7) International Primatological Society, September 13, Kyoto, Japan

2009

- 1) Chimpanzee mind: a combining effort of fieldwork and laboratory work. 2009 AAAS Annual Meeting. February 12-16, Chicago, USA.
- 2) ESF-JSPS Frontier Science Conference Series for Young Researchers. February 28, Napoli, Italy.
- 3) Chimpanzee Mind. The Primate Mind, The "Ettore Majorana" symposium, June 4-7, Erice, Italy.

2008

- 1) Chimpanzee mind: a combining effort of fieldwork and laboratory work. Decade of the Mind3. May 7, Des Moines, USA.
- 2) Comparative cognitive science: trade-off theory of memory and symbolization in humans and chimpanzees. ASSC 12th Annual Meeting. June 21, Taipei, Taiwan.
- 3) Chimpanzee mind: evolution of human mind viewed from panthropology. XXIX International Congress of Psychology. July 24, Berlin, Germany.
- 4) Trade-off theory of memory and symbolization in humans and chimpanzees. International primatological society XXII. August 5, Edinburgh, UK.

2007

- 1) The history of the understanding chimpanzees conference series. The Mind of the Chimpanzee: An International Multidisciplinary Conference on Chimpanzee Cognition. March 22-25, Chicago, USA.
- 2) Cognitive development in chimpanzees: A synthesis of field and lab study. Comparative Cognition in Context Group. March 29, Toronto, Canada.

2006

- 1) Numerical processing in chimpanzees. The 24th European Workshop on Cognitive Neuropsychology. January 22-27, Bressanone, Italy
- 2) Green corridor: An attempt at saving chimpanzees in Bossou and Nimba. The Symbol of Collaboration between Guinea and Japan: Bossou 30 ans. November 27-29, Conakry, Guinea

2005

- 1) Animal behavior about number processing. NUMBRA/ESCOP Summer School "Neuroscience of number processing". July 3-10, Erice, Italy.
- 2) How do animals think? European Forum Alpbach. August 18-25, Alpbach, Austria.

2004

- 1) On HOPE project. The signing ceremony of JSPS and MPG February 12, Munich, Germany.
- 2) Prerequisites of cultural transmission in chimpanzees. 21COE International Symposium on African Great Apes: Evolution, Diversity, and Conservation. March 4, Kyoto, Japan.
- 3) HOPE: A project of KUPRI and MPIEVA 2004-2009. First International Workshop of HOPE. March 6, Kyoto, Japan.
- 4) The mind of the chimpanzee: In the wild and in captivity. ROH Public Symposium on "Sequencing the Chimpanzee Genome: What Have We Learned?" March 12, La Jolla, CA, USA.
- 5) Cognition and personality in chimpanzees. ROH Expert Meeting on "Sequencing the Chimpanzee Genome: What Have We Learned?" March 13, La Jolla, USA.
- 6) Conservation of wild chimpanzees in West Africa. The 1st Meeting of the Section on Great Apes of the IUCN/SSC Primate Specialist Group. 17-19 April, Chicago, USA.

EXHIBIT B

EXHIBIT B

References:

- Allman, J. M., Tetreault, N.A., Hakeem, A., and Park, S. (2011) The von Economo neurons in apes and humans. *American Journal of Human Biology* 23: 5-21.
- Anderson, J.R., Myowa-Yamakoshi, M., and Matsuzawa, T. (2004) Contagious yawning in chimpanzees. *Proceedings of Biological Sciences* 271 (suppl 6): S469-470.
- Armstrong, E. (1985) Allometric considerations of the adult mammalian brain with special emphasis on primates. In *Size and Scaling in Primate Biology* (ed. by W.J. Jungers), Plenum Press, New York, London, pp. 115-146.
- Bauchot, R. and Stephan, H. (1969) Encephalisation et niveau évolutif chez les simiens. *Mammalia* 33: 235-275.
- Beran, M.J., and Rumbaugh, D.M. (2001) Constructive enumeration by chimpanzees on a computerized task. *Animal Cognition* 4: 81-89.
- Beran, M.J., Rumbaugh, D.M., and Savage-Rumbaugh, E.S. (1998) Chimpanzees counting in a computerized testing paradigm. *The Psychological Record* 48: 3-19.
- Beran, M.J., Smith, J.D., and Perdue, B.M. (2013) Language-trained chimpanzees (*Pan troglodytes*) name what they have seen but look first at what they have not seen. *Psychological Science* 24(5): 660-666.
- Biro, D., and Matsuzawa, T. (2001) Use of numerical symbols by the chimpanzee (*Pan troglodytes*): Cardinals, ordinals and the introduction of zero. *Animal Cognition* 4: 193-199.
- Boysen, S.T., and Bertson, G.G. (1989) Numerical competence in a chimpanzee (*Pan troglodytes*). *Journal of Comparative Psychology* 103(1): 23-31.
- Boysen, S.T., Bernston, G.G., Shreyer, T.A., and Hannan, M.B. (1995) Indicating acts during counting by a chimpanzee (*Pan troglodytes*). *Journal of Comparative Psychology* 109(1): 47-51.
- Boysen, S.T., Bernston, G.G., Shreyer, T.A., and Quigley, K.S. (1993). Processing of ordinality and transitivity by chimpanzees (*Pan troglodytes*). *Journal of Comparative Psychology* 107: 208-216.
- Bronson, R.T. (1981) Brain weight-body weight relationships in twelve species of nonhuman primates. *American Journal of Physical Anthropology* 56: 77-81.
- Call, J. (2010) Do apes know that they could be wrong? *Animal Cognition* 13: 689-700.

- Call, J., and Carpenter, M. (2001) Do apes and children know what they have seen? *Animal Cognition* 4: 207-220.
- Call, J., Hare, B., Carpenter, M., and Tomasello, M. (2004) 'Unwilling' versus 'unable': Chimpanzees' understanding of human intentional action. *Developmental Science* 7(4): 488-498.
- Call, J. and Tomasello, M. (1998) Distinguishing intentional from accidental actions in orangutans (*Pongo pygmaeus*), chimpanzees (*Pan troglodytes*) and human children (*Homo sapiens*). *Journal of Comparative Psychology* 112(2): 192-206.
- Cantalupo, C., and Hopkins, W.D. (2001) Asymmetric Broca's area in great apes. *Nature* 414: 505.
- Conway, C.M., and Christiansen, M.H. (2001) Sequential learning in non-human primates. *Trends in Cognitive Sciences* 5(12): 539-546
- Dadda, M., Cantalupo, C., and Hopkins, W.D. (2006) Further evidence of an association between handedness and neuroanatomical asymmetries in the primary motor cortex of chimpanzees (*Pan troglodytes*). *Neuropsychologia* 44: 2572-2586.
- De Waal, F.B.M. (2005) Intentional deception in primates. *Evolutionary Anthropology* 1(3): 86-92.
- Fuster, J.M. (2002) Frontal lobe and cognitive development. *Journal of Neurocytology* 31: 373-385.
- Gallup, G. G. (1970) Chimpanzee: Self-recognition. *Science* 167: 86-87.
- Gannon, P.J., Holloway, R.L., Broadfield, D.C., and Braun, A.R. (1998) Asymmetry of chimpanzee planum temporale: Humanlike pattern of Wernicke's brain language area homolog. *Science* 279 (5348): 220-222
- Goldberg, E. (2002). *The Executive Brain: Frontal Lobes and the Civilized Mind*. Oxford University Press, London.
- Hare, B., Call, J., Agnetta, B., and Tomasello, M. (2000) Chimpanzees know what conspecifics do and do not see. *Animal Behaviour* 59: 771-785.
- Hare, B., Call, J., and Tomasello, M. (2001) Do chimpanzees know what conspecifics know? *Animal Behaviour* 61: 139-151.
- Hayashi, M., Ito, M., and Shimizu, K. (2001) The spindle neurons are present in the cingulate cortex of chimpanzee fetus. *Neuroscience Letters* 309: 97-100.

- Hayashi, M., Matsuzawa, T. (2003) Cognitive development in object manipulation by infant chimpanzees. *Animal Cognition* 6, 225–233.
- Hirata, S., and Matsuzawa, T. (2001) Tactics to obtain a hidden food item in chimpanzee pairs (*Pan troglodytes*). *Animal Cognition* 4: 285-295.
- Hopkins, W. D., Russell, J.L., Lambeth, S., and Schapiro, S.J. (2007) Handedness and neuroanatomical asymmetries in captive chimpanzees: A summary of 15 years of research. In (Hopkins, W.D., ed.) *Evolution of Hemispheric Specialization in Primates*. Academic Press, London, pp. 112-135.
- Hopkins, W.D., Tagliatela, J., Leavens, D.A., Russell, J.L., and Shapiro, S.J. (2010) Behavioral and brain asymmetries in chimpanzees. In (Lonsdorf, E.V., Ross, S.R., Matsuzawa, T., eds.) *The Mind of the Chimpanzee: Ecological and Experimental Perspectives*. University of Chicago Press, Chicago. pp. 60-74.
- Humle, T. and Matsuzawa, T. (2009) Laterality in hand use across four tool-use behaviors among the wild chimpanzees of Bossou, Guinea, West Africa. *American Journal of Primatology*, 70: 40-48.
- Inoue, S., and Matsuzawa, T. (2007) Working memory of numerals in chimpanzees. *Current Biology* 17(23): R1004-R1005.
- Inoue, S., and Matsuzawa, T. (2009) Acquisition and memory of sequence order in young and adult chimpanzees (*Pan troglodytes*). *Animal Cognition* 12(1): S58-S69.
- Johnson, M.H. (2001) Functional brain development in humans. *Nature Reviews Neuroscience* 2: 475–483.
- Kaneko, T. and Tomonaga, M. (2011) The perception of self-agency in chimpanzees (*Pan troglodytes*). *Proceedings of the Royal Society B*. 278: 3694-3702.
- Kawai, N., and Matsuzawa, T. (2000) Numerical memory span in a chimpanzee. *Nature* 403 (6): 39-40.
- Matsuzawa, T. (1985) Use of numbers by a chimpanzee. *Nature* 315(2): 57-59.
- Matsuzawa, T. (2007) Comparative cognitive development. *Developmental Science* 10: 97–103.
- Myowa-Yamakoshi, M. and Matsuzawa, T. (2000) Imitation of intentional manipulatory actions in chimpanzees (*Pan troglodytes*) *Journal of Comparative Psychology* 114: 381-391.
- Povinelli, D.J., Rulf, .B., Landau, K.R., and Bierschwale, D.T. (1993) Self-recognition in chimpanzees (*Pan troglodytes*): Distribution, ontogeny, and patterns of emergence. *Journal of Comparative Psychology* 107: 347-372.

Rumbaugh, D.M., Savage-Rumbaugh, S., and Hegel, M.T. (1987) Summation in the chimpanzee (*Pan troglodytes*). *Journal of Experimental Psychology: Animal Behaviour Processes* 13(2): 107-115.

Sakai, T., Hirai, S., Akichika, M., Suzuki, J., Hamada, Y., Tomonaga, M., Tanaka, M., Miyabe-Nishiwaki, T., Makashima, H., Nakatsukasa, M., and Matsuzawa, T. (2010) Prolonged maturation of prefrontal white matter in chimpanzees. *Evolution* 3: 4.

Sakai, T., Mikami, A., Tomonaga, M., Matsui, M., Suzuki, J., Hamada, Y., Tanaka, M., Miyabe-Nishiwaki, T., Makishima, H., Nakatsukasa, M. and Matsuzawa, T. (2011) Differential prefrontal white matter development in chimpanzees and humans. *Current Biology* 21: 1397-1402.

Semendeferi, K. and Damasio, H. (2000) The brain and its main anatomical subdivisions in living hominoids using magnetic resonance imaging. *Journal of Human Evolution* 38: 317-332.

Tagliatella, J.P., Russell, J. L., Schaeffer, J.A., and Hopkins, W.D. (2008) Communicative signaling activates 'Broca's' homolog in chimpanzees. *Current Biology* 18(5): 343-348.

Tomonaga, M., and Matsuzawa, T. (2000) Sequential responding to Arabic numerals with wild cards by the chimpanzee (*Pan troglodytes*). *Animal Cognition* 3: 1-11.

Tomonaga, M., Myowa-Yamakoshi, M., Mizuno, Y., Yamaguchi, M., Kosugi, D., Bard, K., Tanaka, M., and Matsuzawa, T. (2004) Development of social cognition in infant chimpanzees (*Pan troglodytes*): Face recognition, smiling, gaze and the lack of triadic interactions. *Japanese Psychological Research* 46: 227-235.

Ueno, A., Hirata, S., Fuwa, K., Sugama, K., Kusunoki, K., Matsuda, G., Fukushima, H., Hiraki, K., Tomonaga, M., and Hasegawa, T. (2010) Brain activity in an awake chimpanzee in response to the sound of her own name. *Biology Letters* 6: 311-313.

Woodruff, G., and Premack, D. (1981) Primitive mathematical concepts in the chimpanzee: proportionality and numerosity. *Nature* 293: 568-570.