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Origin of Genius, Scientists vs Artists (Painters)- Does it Time Reversal based Double Role of Microglia / Brain Activity Inside Human Brain Immune System? A Possibility

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Abstract: ***Microglia are the only immune cells that permanently reside inside the human brain along with neurons and other cells. It is confirmed that microglia are originated mainly from Yolk Sac and maintained their numbers through a process of self-renewal. This characteristic raised an issue on microglia over five decades- whether this brain immune defenders (i.e. microglia) are capable to stay as life-long residents? Recent observational result of a single-cell study , performed by Zemke et al [26], reveals a major changes in immune cells i.e. the existing microglia turn into new cells in the aging human brain between (50 – 70) yrs bearing similar characteristics as that of earlier microglia. It is a scenario of an epigenetic and 3D genome reprogramming that appears during the aging of human hippocampus. This author considers the turning of existing microglia into new cells through 3D reprogramming as a "Time Reversal" i.e. cellular aging reversal (rejuvenation via reprogramming) occurred during the period (50 – 70) yrs. This means microglia offer two roles inside the human brain during life-span i.e. one scenario for the age (0 – 50) yrs played by earlier or existing microglia and the other one for the age (50 – 75) yrs played by newly created or rejuvenated microglia-like new cells. The author (Parui 2026 [29]) have shown that for genius scientists (like Ramanujan, Einstein) human brain exhibited optimal brain function at ages around ~ 26 yrs (i.e. the around the second barrier of 32 yr). In this study it is shown that genius painters (like Leonardo Da Vinci and his world famous creation "Monalisa"; Michelangelo and his creation "The Last Judgment", Pablo Picasso and his paintings "Guernica", "Weeping Woman", Rembrandt and his "Returning of Prodigal son", van Gogh and his "The Starry Night", etc) published their world famous creations around the ages ~ (50 – 66) yrs i.e. around the third barrier of 66 yr which falls within the experimental observation period (50 – 70) yrs. This implies the "existence of two separate domains", i.e. applicable domain for Genius Scientists ~ 26 yr and another applicable domain for Genius Painters~ 66 yr, where the earlier microglia and new cells of replaced microglia show their optimal brain functioning in human brain immune systems, respectively.***

Keywords: human brain, microglia, immune systems, functional connectivity, genius

1. Introduction

Regarding the "Genius", in fact, there is no precise definition of genius. What we mean or understand is that "Genius" is a characteristic of original and exceptional insight in the performance of some type art or endeavor that surpasses expectation, or creates a new standards for future through establishing better methods of operations as well as remaining beyond the reach of competitors [1]. As genius is associated, in general, with intellectual ability and creative productivity means it refers to people characterized by genius across many subjects. This means a genius may have extraordinary capability to apply creativity and imaginative thinking under any situation [2] and it is subject oriented. So the "domain of genius" refers to the specific field of study, art or human endeavor- such as physics, mathematics or music where an individual makes original, groundbreaking contributions. In a conclusive sense, a genius is typically domain-specific, implying that "high level creativity" and "mastery" are usually expressable to that concerned area rather than across all subjects [3].

1) Microglial heterogeneity in human brain

Human brain is the most extreme mysterious systems. Like any living tissue a human brain is also constantly changes that leads to change in brain function and structures. Again, brain is arranged in two major classes of tissues- gray matter (GM) and white matter (WM) which are surrounded by cerebro spinal fluid (CSF). This microglia are the special type cell which are essential for the defense mechanism in the brain i.e. in the central nervous system (CNS). This means microglia are exclusively located in the CNS and distributed in both gray matter (GM) and white matter (WM) but having a slight preference for white matter (WM). Not only that, it has been found that higher concentration of microglia is in the brain stem, hippocampus and basal ganglia whereas least concentration in the areas of cortex of the cerebellum and neo-cortex. As a result, microglia exhibit their significant role in immune responses within the CNS. Even, in the case of sudden trauma or inflation, microglial cell number increases in order to response the situations such that these cells first actively encircle and then penetrate the affected tissues to perform their immune function. As the greater concentrations of microglia are observed in parts of the brain tissue, so this is extensively neuronal degeneration [4].

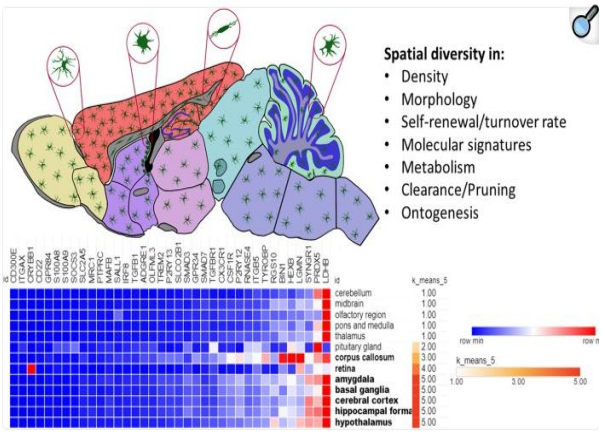

Figure 1: Represents the clear indication of regional heterogeneity of microglia in the brain, in particular Microglia differ in their cell number, cellular and subcellular structures, molecular signature as well as relevant functions in different mouse brain areas.(for details see the text of reference Tan et al 2020 [5]. **Figure adopted from ref. [**5])

Recent observation [5] on the manifestation of microglia shows phenotypical heterogeneity across different regions in the CNS. But what is the underlying mechanism and functional processes of this heterogeneity is still unclear. Figure 1 shows the regional heterogeneity of microglia in the brain, as obtained by Tan et al [5], based on the available microglia's different characteristics, i.e. cell number. Cellular and molecular structure, molecular structure, molecular signature, as well as relevant functions in different mouse brain areas. This "regional

Heterogeneity' , according to Tan et al [5], indicates that microglia may differ among and within specific brain regions, or may have same subtype of cells but located in different anatomical regions with different abundances or different subtypes in different anatomical regions. This means that observed manifestation of microglia shows phenotypical heterogeneity.

2) Microglia from origin to function during brain development

Embryonic Origin → Analysis of various observations inferred that microglia, unlike other glial cells, donot originate from the ectoderm (i.e. ventricle part of the neural tube rather come from mesoderm (figure 2). i.e. microglia are part of the mononuclear phagocyte system along with blood monocytes and all subtypes of tissue macrophages. This implies a common origin with monocytes in the blood, tracing back to the yolk sac erythro-myeloid precursor [6]. i.e. microglia arise early in development from the progenitor located in the embryonic yolk sac [7,8]. The idea of yolk sac origin of microglia was first raised on the basis of observations in mice and chickens [9,10] and was later confirmed for human brain. Initially it was through that microglia in human brain (a) to be derived from early yolk sac macrophages [11]. Another results from immunohistochemical studies of the detected earliest microglia in the human forebrain at approximately 4 – 5 weeks of gestation, confirmed that the macrophages was during the prenatal development period i.e. favoring the idea of yolk sac origin of human microglia [12 – 15].

Development of Microglia with the human development→ As mentioned above that microglia arise mainly from yolk sac (YS) primitive macrophages and reside in the brain throughout life by maintaining their numbers following the process of self-renewal [16]. Normal blood circulation is essential for seeding of the CNS. Microglia enter the brain rudiment via the leptomeninges and lateral ventricle and then distribute throughout the cortical wall from both directions at different speeds with varying rates of proliferation and maturation depending on the region and development stages [17-19]. Note that in the case of mouse brain both the radial and the tangential migration of microglia was observed towards the putative white matter (WM), subplate and cortical plate layers [20,21]. What happens during human development —

a) Microglial precursors first infiltrate the brain during early organogenesis;
b) Cluster formation around the entrysites like meninges, choroid plexus, and ventricular zones [20,21];
c) This human microglia, then migrate both tangentially across the cortical surface and radially into deeper parenchymal regions;
d) Within 8– 10 gestational weeks this microglia are largely distributed throughout the fetal human brain [22];
e) Microglia possess a remarkable long term self-renewal systems in adulthood.
f) Adult microglia are more dynamic and capable to exhibit specific – specific turnover rates depending on life-span, location of brain region as well as environment [23].
g) Carbon-14 retrospective birth dating indicates the turnover proceeds at a significantly slower pace i.e. at an average annual rate of approximately 28 % [24].
h) The gradual renewal contribution to a heterogenic age profile among human microglia [25] that may influence their functional properties over time.
i) In adulthood, the ramified microglia play an important role as effectors of plasticity, maintaining neuronal circuit and remodeling (see figure 2).
j) Dark microglia are abundant in the aged brain [25].

Although human microglia possess above mentioned characteristics, however, several studies raised the fundamental questions that are still remain unsolved over five decades such as — the unknown cell cycle dynamics of microglia i.e. "how long do microglia live ? " ; if the answer is life-long then "are long-lived microglial progenitors found in brain ?" , etc.

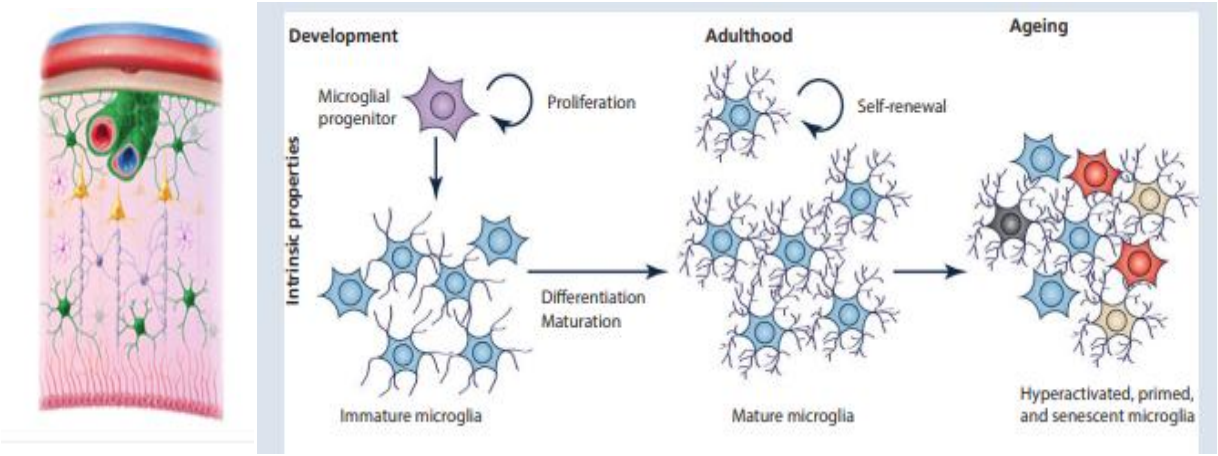

Figure 2: Schematic diagram showing (left) microglia inside the brain, marked as green colour cells (courtesy and figure credit Prof. C. Bozidis [4]); (right) the development of microglia inside the brain during human development. For details see the text of ref. Tay et al. [25]. (adopted from the same ref [25])

3) Myth Vs New Observation

The early belief is that the brain's immune defenders, known as microglia, were capable to stay life-long residents [6,24]. In particular, the cells that are involved with this were set up before birth and then simply patrolling the hippocampus (i.e. our memory and also learning center) for the rest of our lives. In order to search the myth Zemke et al [26] made an experiment through examination of hippocampus tissue, collected from 40 neurologically healthy adults with ages ranging from 20 to 95 years, and then using single –cell analysis of both (a) the gene activity, and (b) the genome's physical architecture, what they found are:

a) A dramatic shift in the brain's immune cells (i.e. microglia) between approximately ages 50 and 70 yrs. As the microglia are originated during embryonic development, they declined substantially and were replaced by cells having similar molecular signature as that of existed immune cells in the blood. i.e. replacement of microglia-like cells that are capable to exhibit elevated inflammation.
b) It is suggested that these microglia-like cells may contribute to chronic "neuro-inflamation" in the aging human brain.
c) As the microglia are essential for maintaining brain homeostatis so failing of these cells to perform their usual house-keeping duties means accumulation of toxic materials can trigger various inflammatory processes that may contribute to the origin of different neurodegenerative diseases.
d) Observation of a global erosion of 3D genome structure that exists across the multiple brain cell types. It is suggested that this structural breakdown of the genome may be considered as a turning point of fundamental hallmark of brain aging as well as understanding how aging reshapes the human genome in human brain cells.

4) Quantum Tunneling model of human brain development with Five turning points

The usual fact is that there is the trajectories of change in the brain structure and function across the human life-span (i.e. from birth to till date) offer the scientists to develop a "structural topology of human brain over life time [27]. In fact, this topology is a complex with neural connection, originated and developed with age as well as is associated with very cognitive behavioral and mental outcomes. Scientists have identified that "Five Nonlinear" stages of human brain development as [28,29]:

- Epoch 1: 0 – 9 yrs old- "Infancy into Childhood"- "Child brain"
  Barrier between epoch 1 and epoch 2 → "First Barrier" (called Barrier of 9 yrs)
- Epoch 2: 9 – 32 yrs old — "Adolescence" → "Adolescence brain "
  Barrier between epoch 2 and epoch 3 → "Second Barrier "(called Barrier of 32 yrs)
- Epoch 3: 32 – 66 yrs old — "Adulthood" → "Adult brain"
  Barrier between epoch 3 and epoch 4 → "Third Barrier" (called barrier of 66 yrs)
- Epoch 4: 66 – 83 yrs old → "Early aging"→"Early Aging Brain"
  Barrier between epoch 4 and epoch 5 → "Fourth Barrier (called barrier of 83 yrs)
- Epoch 5: 83 – 90 yrs old → "Late aging "→ Late aging Brain"

The characteristics of these phase or epochs during brain development are [31]:

In Childhood phase

a) In this phase the infant's brain network typically develop in such a way that it displays adult-like structure with hub distribution, rich club and modulatory at birth [30 – 32].

In adolescence phase

a) The brain grows showing maximally efficient and integrated at around 30 yrs old (known as peak age [33, 34].
b) Even, in the fourth decade of life (i.e. 30 – 40 yrs age,) the brain develop in such a way that it (brain) interacts with the other development resulting which a "milestone" appears in the life.
c) Not only that, after this phase and into the late life phase, the brain works in such a manner that aging is associated with reduced connectivity i.e. pruning of weak connection and increasing modulatory than the earlier life.

5) Brain functioning at around different barriers

It is mentioned earlier that the four major topological turning points across the human life-span are- ages at 9, 32, 66 and 83 yrs old. These turning points can be considered as quantum tunneling barriers [28,29], i.e.

1st tunneling barrier at around 9th year between the end of "childhood" and beginning of "adolescence".

2nd tunneling barrier at around 32th year between the end of adolescence and beginning of "adulthood".

3rd tunneling barrier at around 66th year between the end of "adulthood" and beginning of "early aging".

4th tunneling barrier at around 83th year between the end of "early aging" and beginning of "late aging".

Note that measuring of the exact mapping of human brain function at the barriers in quantum level is not possible. Therefore, we can consider the "Genius" and "Exceptional intelligent" persons base on their activeness (i.e. through their invaluable contributions) in the respective fields in order to obtain a rough reflection on brain function at the concerned barriers.

6) Re-analysis of the earlier work of Andrews-Hannas et al [35])

To understand the cognitive decline (in the absence of disease) which is commonly observed in advanced aging Andrews-Hanna et al [35] considered 93 adults with ages from 18 to 93 yrs. They found that aging is characterized by reductions in normally present functional correlations within two higher-order brain systems, i.e. anterior to posterior components within the default network face most severe disruption with age as shown in figure 1. This correlation reductions were severe in the case of older adults (those are

Free from Alzheimer's disease). According to them this reduced correlations were associated, in fact, with the disruptions in white matter integrity and poor cognitive performance across a range of domains. Their observed cognitive drives in normal aging, arises from functional disruption in the coordination of large scale brain systems, can be divided into two separate regions — one, in the region between (20-32) yrs (i.e. around the 2nd barrier marked by "A") and the other one, in the region between (60 – 93) yrs (i.e. around the 3rd barrier of 66th yrs (marked by "B"). Thus, brain functioning offers us three domains or regions [36] as :

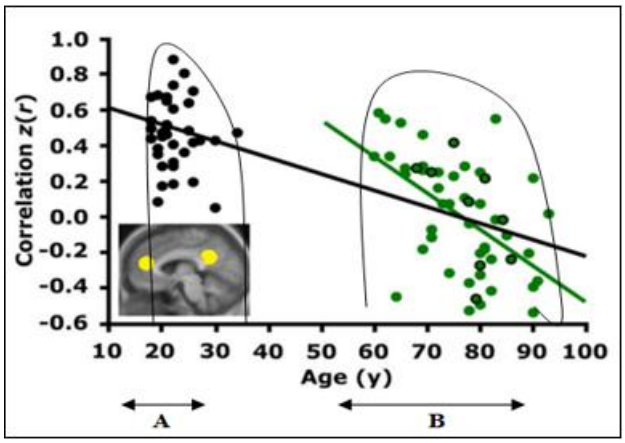

Figure 3: Original figure as obtained by Andrews-Hanna et al (i.e. figure 1. Anterior to Posterior Functional Correlations in ref. [35] is modified by this author into two regions marked by A and B for the corresponding age regions (20 – 35) yrs and (60 – 95) yrs, respectively.

a) The first region (A) which is associated with the childhood and adolescence phase where the cognitive abilities typically increase so that enabling acquisition of progressively complex skills. It causes the domain of (20 – 32) yrs.
b) The second region involves the period of most of the adulthood where brain function is relatively stable.
c) The third region (B) appears during later part in life-span where the aspects of brain structure and function may decline with substantial inter-individual variability. This region covers the domain of (60-95) yrs.

7) Genius: Scientists, applicable domain (20 – 30) yrs

Our known genius, till date, in mathematics and physics are Srinivas Ramanujan, and Albert Einstein, respectively and recently known Suborno Issac Bari and Sabrina Gonzalez Pasterski. In the case of Ramanujan it is known that he believed Goddess Namagiri and felt Namagiri's blessings / influence on each step of his every mathematical works, papers which are recorded in his famous "Note Book" [37]. Without any degree he went to Cambridge, UK, and under Professor Hardy's care Ramanujan turned into a "Genius". But records available inside the "Note Book" indicated that his geniuses were reflected at the time of his childhood.

In the case of Albert Einstein, he believed in God and sang devoted songs from his childhood, even at the age of 12 yrs. Later his geniousness was known after his published papers on General Theory of Relativity in the year 1905 when he was 26 years old.

For Suborno Issac Bari, it is believed that he is a child prodigy, without any formal degree he becomes professors in a number of universities in USA, India when he was at the age of 9 – 13 years old.

The known fact about Sabrina Pasterski is that she built a single engine aero plane at the age of 13 yrs old.

From the above it is clear that the "Genius" exhibit their highly exceptional intelligence in their childhood with ages around (9 – 12) years i.e. around the 1st barrier of age 9 yrs. The basic fact is their internal energy levels are so high that

they can easily cross the first quantum tunneling barrier and capable to imagine beyond that of the common people (see figure 7 of ref. Parui [29]

For highly extraordinary intelligent personalities (i.e. Nobel Laureates, and others)- their contributions have changed the world due to the effect of various discoveries, inventions, ideas. In a recent paper Parui [29] has shown that these personalities have made their discoveries, and remarkable contributions at the ages of 26 – 40 years, i.e. around the second barrier of 32th year (see Table 1 of ref. Parui [29]. Although we have considered a few of such personalities yet the realistic fact is that the maximum number of contributions come from the age of around 26 years.

8) Genius: Artists (Painters), applicable domain (50 – 66) yrs

In the field of painting, the known Genius Painters are Leonardo Da Vinci (born.1452, Italy), Michelangelo (b. 1475, Italy), Rembrandt van Rijn (b. 1606, Netherlands), Vincent van Gogh (b. 1853, Netherlands), Pablo Picasso (b. 1881, Spain). Their world famous paintings that make them genius are:

Monalisa (published in 1503 when Leonardo was 51 yrs old);

The Last Judgment (published in 1541, Michelangelo was 66 yrs old);

Return of the Prodigal sons (published in 1669, van Rijn was 63 yrs old);

Weeping Woman (published in 1937, Picasso was 56 yrs old);

Water Lilies (published in 1906 Monet was 66yrs old).

It is clearly observed from the above (see Table 1) that brain functioning for painters exhibits as genius through their world-famous paintings when they were above 55 yrs old, precisely ages ranging (51-66) yrs (except for van Gogh — at the age of 36 yrs old his famous painting "The Starry Night" was published in 1889). In this study we also consider 150 painters (data available in wikipedia) whose painting works are very exceptional quality. In this case we found 21 painters whose ages are within the range (50 – 66) yrs, and rest are below 50 yrs i.e. within the range (32 – 50) yrs.

9) Comparison of Recent result of Brain Functioning and parameters of Genius Painters

Time Reversal → Time reversal in cells is a scenario when cellular aging reversal (i.e. rejuvenation via reprogramming) occurs. It is a non-linear, non-equilibrium active processes inside living cells.

In Table 1 we tabulate parameters for 9 genius painters - 6 painters with ages between (51-68) yrs while 2 painters with ages above 70 yrs, and one (i.e. van Gosh) 36 yrs. Recent findings of human brain function, obtained by Zemke et al [26] suggested that brain functioning suffers a dramatic shift in Microglia (i.e. the brain's immune cells between approximately ages (50 – 70) yrs. This means the microglia which was originated during embryonic development, declined substantially in one side, while in another side, these are "replaced by new cells "with molecular signatures resemble immune cells that were previously in the blood i.e. replacement of microglia-like cells. As the genius painters show their brain function optimally by creating world famous extraordinary painting during the ages (50 – 70) yrs i.e. in the same observed period. It can be said that creation of new cells, as replacement of microglia, that may be responsible for creating extraordinary by the painters under the influence of optimal brain functioning. In other words, creation of new cells, according to Zemke et al, is a 3D genome reprogramming during the aging of human hippocampus.

This scenario can be considered as "time reversal" in the case of brain function during the period of ages (20 – 32) yrs the "time reversal" becomes active as soon as embryo formation takes place. Around the ages ~ 26th yrs i.e. around the 2nd barrier of 32 yrs when the genius scientists exhibit their geniusness by publishing their remarkable seminal works (papers).

During the period of (50 – 70) yrs another "time reversal "becomes active at the age 50 yrs when new cells are created as replacement of existing microglia in the brain immune systems and finally 3D genome reprogramming turns into effective the signature of which is the result of creation of world famous extraordinary creations like" Monalisa-painting mixed with deep science", "The Last Judgment-painting mixed with rich human emotion.

2. Conclusion

Human brain is the most extreme mysterious object. Microglia are the resident immune cells of the central nervous system (CNS) resulting which they play a critical core in maintaining brain homeostatis, supporting neuro-development as well as responding to injury and diseases [38]. In order to search the exact role of microglia inside the human brain Zemke et al [26] performed an experiment using single-cell analysis over 40 neurologically healthy adults having ages ranging (20 – 95) yrs and found significant results indicating that during the period (50 – 70) yrs a drastic changes occur in the existing microglia cells. Especially as the 50th yrs the existing microglia cells turn into a new cells having similar characteristics as that was possessed in the early existing microglia. Based on this observed result it is suggested that as soon as microglia-like new cells formation take place, these new cells suffer a 3D genome reprogramming process (like the "time reversal") becomes active at the ages 50 yrs and continues its development till the age 70 yrs. It is expected that the "time reversal " occurring at 50 yrs is the similar one with that was occurred at the embryonic phase i.e. at the beginning of the life-span. This implies that the human brain activity has double role- one from (20 – 32) yrs where microglia cells have active role towards the exhibition / development of genius scientists, while the other one at ages (50- 70) yrs where replaced microglia like new cells plays a critical role for favoring the genius painters to create and exhibit their world famous paintings. Simply, it can be said that ages

ranging (20-32) yrs is the applicable domain for genius scientists in which the ages ~ 26th yr or around the 2nd barrier of 32th yr is the critical age when human brain function exhibits optimal activity for the genius scientists, while ages (50 – 66) yrs is the suitable domain for genius painters, in particular ages around the 3rd barrier, during that period genius painters are capable to create world famous creations that make them genius. Therefore, double role in human brain's function is confirmed. However, this breakthrough observation opens a new window to understand the unresolved facts , such as- " how the existing microglia turns into new cells with similar characteristics ?" ; " how the 3D genome reprogramming appears in the replaced cells and time reversal like effect becomes active ? ", etc.

Table 1: List of 9 Genius Painters and other exceptional painting personalities (basic parameters taken from available data in Wikipedia and other sources)

Name of the Painter	Country	Date of Birth / year	Famous Painting Indication of higher level (year)	At the age (year)	Around the barrier point BP = Around Epoch= yr
GENIUS					
Leonardo Da Vinci	Italy	**15/4/1452**	Monalisa (1503 – 1505)	51-53	BP = 66yr Around ~ 52 – 66 yr Epoch= (32-66) yr
Michelangelo	Italy	**1475**	The Last Judgment (1541)	66	BP = 66yr Around ~ 66 yr Epoch= (32-66) yr
Pablo Picasso	Spain	1881	Guernica (1937) Weeping woman (1937)	56	BP = 66 yr Around ~ 56 – 66 yr Epoch= (32-66) yr
Rembrandt van Rijn	Netherlands	1606	Returning of Prodigal son (1661 – 1669)	55-56	BP = 66 yr Around ~ 55 – 66 yr Epoch= (32-66) yr
Claude Monet	France	1840	Water Lilies (1877)	57	BP = 66 yr Around ~ 57 – 66 yr Epoch= (32-66) yr
Kutsushika Hokusai	Japan	1760	Great wave of Kanagawa (1831)	71	BP = 66 yr Around ~ 66 - 71 yr Epoch= (66-83) yr
Vincent van Gogh	Netherlands	1853	The Starry Night (1889)	36	BP = 32 yr Around ~ 32 –36 yr Epoch= (32-66) yr
Georgia O'Keeffe	America	1887	The Sky above Clouds IV (1965)	78	BP = 83 yr Around ~ 78 –83 yr Epoch= (66-83) yr
Francisco Goya	Spain	1746	The Third of May 1808 (1814)	68	BP = 66 yr Around ~ 66 – 68 yr Epoch= (66-83) yr
Others Exceptional Higher level					
Diego Velazquz	Spain	1599	Las Meninas (1656)	57	BP = 66 yr Around~57-66 yr Epoch= (32-66) yr
Edgar Degas	France	1834	Blue Dancer (1897)	63	BP = 66 yr Around~ 63 – 66 yr Epoch= (32-66) yr
Charles de La Fosse	France	1636	Bacchus and Ariadne (1699)	63	BP = 66 yr Around~63-66 yr Epoch= (32-66) yr
Fitz Hugh Lane	America	1804	Owl's Head	58	BP = 66 yr Around~58-66 yr Epoch= (32-66) yr
Anne Luis Girodet Trioson	France	29/1/1767	Madam Jacques-Luis Reizel (1923)	56	BP = 66 yr Around ~ 56-66 ye Epoch= (32-66) yr
Caspar David Friedrich	Sweden	1774	Two men contem-pleting the Moon (1830)	56	BP = 66yr Around ~ 56-66 yr Epoch= (32-66) yr
Joseph M W Turner	UK	1775	Venice (1835)	60	BP = 66 yr Around ~ 60-66 yr Epoch= (32-66) yr
Hieronymus Bosch		1450	Garden of Earthly delight (1510)	60	BP = 66 yr Around ~ 60-66 yr Epoch= (32-66) yr
Francois Marius Granet	France	1775	View Nar Rouen (1825)	50	BP = 66 yr Around ~ 50-66 yr

					Epoch= (32-66) yr
George Henry Laporte	UK	1799	Hunters and Groom in a Paddock (1860)	61	BP = 66 yr Around ~ 61-66 yr Epoch= (32-66) yr
Rene Magritte	Belgium	1898	The Son of Man (1964)	66	BP = 66 yr Around ~ 66 yr Epoch= (32-66) yr
Yayoi Kusama	Japan	1929	Dots Obsession (2003)	74	BP = 66 yr Around ~66- 74 yr Epoch= (66 - 83) yr
Mary Cassatt	America	1844	Boating Party (1894)	50	BP = 66 yr Around~ 50-66 yr Epoch= (32-66) yr
Nicolas de Largilliere	France	1656	The Scupture Nicolas Coustou (1712)	56	BP = 66 yr Around~ 56 – 66 yr Epoch= (32-66) yr
Hendrik Frans van Lint		1684	Classical Landscape (1749)	65	BP = 66yr Around~ 65-66 yr Epoch= (32-66) yr
Anna Dorothea Lisiewska		1721	Self Portrait (1776)	55	BP = 66 yr Around ~ 55-66 yr Epoch= (32-66) yr
Louis Michel van Loo	Russia	1707	The Artists with Portrait of his Father (1762)	55	BP = 66 yr Around~ 55-66 yr Epoch= (32-66) yr
Anthonie de Lorme	France	1610	Interior of the St Laurenskerk in Rotterdam (1665)	55	BP = 66 yr Around ~ 55-66 yr Epoch= (32-66) yr
Benedetto Luti	Spain	1666	Boy with a Flute (1720)	54	BP = 66 yr Around ~54 – 66 yr Epoch= (32-66) yr

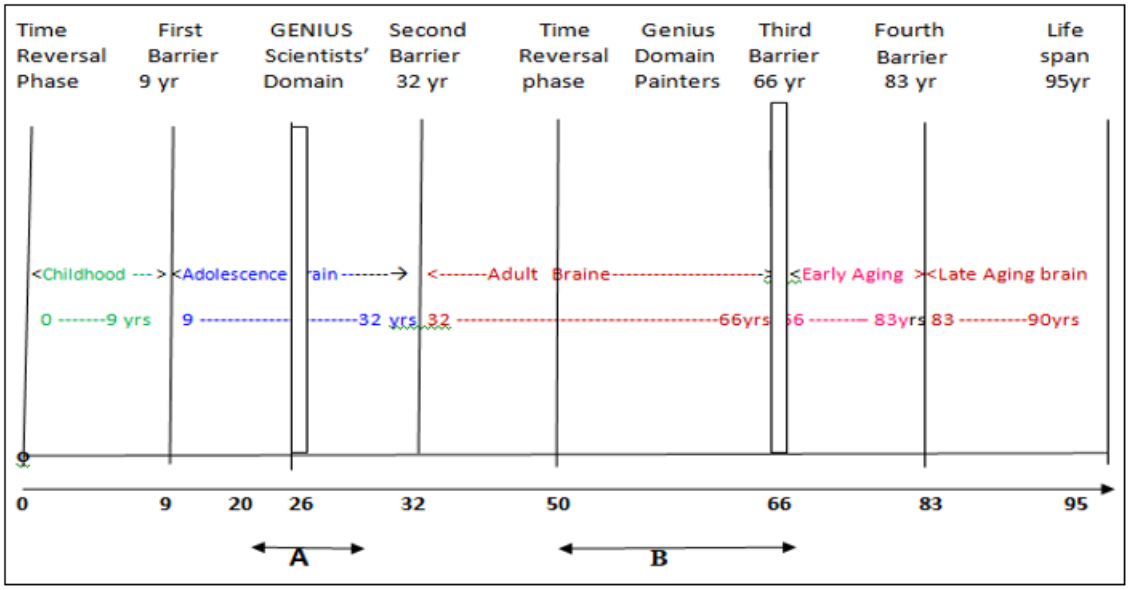

Figure 4: Represents two separate regions, with time reversal phases 0 yr, 50yr; applicable domain for scientists A , applicable domain for painters B (not scale), tunneling barriers at 9yr, 32yr, 66yr, 83yr.

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References

[1] C M Cox: The early mental traits of 300 geniuses. Genetic Studies of Genius. vol 2. Stanford Uni. Press. ISBN-0-8047-0010-9
[2] H Eysenck: Genius in The Natural History of Creativity, Problems in the behavioral Science, vol-12, Cambridge Univ. Press, ISBN-998-0-5-2148508-1
[3] J Baer: Domains of Creativity, in Encyclopedia of Creativity, 2nd Ed. P.377-382 (2011), Academic Press
[4] C Bozidis : Microglia (21 Nov 2024)

[5] Y-L Tan, Y. Yuan, L. Tan: Microglial regional heterogeneity and its role in the brain. Molecular Psychiatry. 25, 351-367 (2020)
[6] T. Shimizu, M Prinz: Microglia across evolution: from conserved origins to functional divergence. Cellular. Molecular Immunity. 22, 1533 – 1548 (2025)
[7] F.Ginhoux, M Guillioams: Tissue-resident macrophage ontogemy and homeostatis. Immunity 44, 439-49 (2016)
[8] M Prinz, T Masuda, M A Wheeler et al. Microglia and central nervous system-associated macrophages from origin to disease-modulation. Annu. Rev. Immunity. 39, 251-277 (2021)
[9] F Alliot, I Godin, B Pessak: microglia drive from progenitors, Originating from the Yolk sac and which proliferate in the brain. Brain. Res. Dev. Brain Res. 117, 145-152 (1999)
[10] M A Cuadros, C Martin, P Cottey et al: First appearance and distribution, and origin of macrophages in the early development of avian CNS. J. Comp. Neurology. 330, 113-129 (1993)
[11] F Ginhoux, S. Jung: Monocytes and macrophages, developmental pathways and tissue homeostatis. National Rev. Immunology. 14, 392-404 (2014)
[12] Z Bian, Y Gong, T Huang et al. Deciphering human macrophages development of single cell resolution. Nature. 582, 571-574 (2020)
[13] R Sankowski, P Suβ, A Benkendorff, et al. Multiomic spatial landscape of innate immune cells of human CNS borders. Nature. Medical. 30, 186 – 98 (2024)
[14] Z. Wang, Z Wu, H Wang et al. An immune cell atlas reveals the dynamics of human macrophage specification during prenatal development. Cell 186, 4454 -4471 e4419 (2023)
[15] Z Wu, Y Wang, W W Chen, et al.Peripheral nervous system microglia-like cells regulate neural some size throughout evolution. Cell, 188, 2159-2174e2115 (2025)
[16] D. Hashimoto, A Chow, C Noizat , P Teo etal.: Tissue-resident macrophages self-maintain locally throughout adult life with minimal contribution from circulating monocytes. Immunity 38, 792–804 (2013)
[17] F. Ginhoux,M Greter, M Leboeuf etal : . Fate mapping analysis reveals that adult microglia derive from primitive macrophages. Science 330, 841–845. (2010)
[18] I ArnouxI, M Hoshiko, L Mandavy et al: Adaptive phenotype of microglial cells during the normal postnatal development of the somatosensory “Barrel” cortex. Glia 61, 1582–1594 (2013)
[19] N Swinnen, S Smolders, A Avila et al: Complex invasion pattern of the cerebral cortex bymicroglial cells during development of the mouse embryo. Glia 61, 150–163 (2013)
[20] A Monier, H Adle-Biassette,A L Delezoide,P Evrard, P Gressens, C Verney: Entry and distribution of microglial cells in human embryonic and fetal cerebral cortex. J Neuropathol Exp Neurol 66, 372–382 (2007)
[21] C Verney, A Monier,C Fallet-Bianco, P Gressens : Early microglial colonization of the human forebrain and possible involvement in periventricular white-matter injury of preterm infants. J Anat 217, 436–448 (2010)
[22] D A Menassa, T Muntslag, M Martin-Estebane et al: The spatiotemporal dynamics of microglia across the human lifespan. Dev. Cell. 57:2127–2139.e212 (2022)
[23] K Askew, K Li, A Olmos-Alonso, F Garcia-Moreno, Y Liang et al: Coupled proliferation and apoptosis maintain the rapid turnover of microglia in the adult brain. Cell Rep. 18:391–405. (2017)
[24] P. Reu, A. Khosravi, S. Bernard, J. E. Mold, M. Salehpour, et al. The life span and turnover of Microglia in the human brain. Cell Reports. 20, 779 – 784 (25 July 2017)
[25] T L Tay, JC Savage, CW Hui, et al: Microglia across the lifespan: from origin to function in brain development, plasticity and Cognition. J Physiology. 595, 1929-1945 (2017)
[26] N. R. Zemke, S. Lee, S. Mamde, B. Yang, N. Berchtold, et al. Epigenic and 3D genome reprogramming during the aging of human hippocampus. Science. 23 July 2026) DOI: 10.1126/Science.adt8307
[27] A. Rossi. Brain and Quantum mechanics: the Epistemological challenges of neuro science” (20April 2024). Available at: SSRN: http://ssrn. Com/abstract=4801540
[28] A Mousley, A I Richard, et al.: Topology turning points across the human lifespan. Nature Comm. 16, 10055 (2025)
[29] R. K. Parui. Einstein’s Brain: As evidence of (a) Existence of Tachyon and (b) dual activities of Human Brain: A possibility. Int. J. Sci. Res. 15, 1340 (2026). DOI: 10.21275/SR26520170840;
[30] D. Mietchen, C. Gaser. Computatioal morphometry for detecting changes in brain structure due to development, aging, learning, disease and evolution. Frontier. Neuroinformatics. 3, 25 (2009)
[31] W. Welker. in Why does Cerebral Cortex fissure and fold? vol.8B, 3 – 136 (Springer, USA, 1990)
[32] D. C. van Essen. A tension-based theory of morphogenesis and compact wiring in the central nervous system. Nature. 385, 313 – 318 (1997)
[33] D. C. van Essen. Surface based approaches to spatial localization and registration in primate cerebral cortex. NeuroImage. 23 Suppl 1, S97 –S107 (2004)
[34] E. Lewitus, I. Kelava, W. B. Hunttner. Conical expansion of the outer subventricular zone and the role of neocortical folding in evolution and development. Frontier. Human Neurosci. 7, 00424 (2013)
[35] J. R. Andrews-Hanna, A. Z. Snyder, J. L. Vincent, C. Lustig, et al. Disruption of large scale brain systems in advanced aging. Neuron. 56, 924-935 (2007) DOI:10.1016/j.neuron.2007.10.10038
[36] Aging and the Brain -- Physiopedia
[37] B. C. Berndt. Ramanujan’s Note Book, Springer, 1985
[38] M. Frosch, M. Prinz. Niche-specific therapeutic targeting of myeloid cells in the Central nervous System. Immunity. 58, 1101- 1108 (2025)