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ON UNIVERSAL X-STRUCTURE REGENERATED BRAIN STEM CELLS IDENTIFICATION

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ABSTRACT

It is generally accepted that the nerve cells of the human brain are not regenerated. It's known that local neuronal circuitry has a direct impact on adult neural stem cells in the adult mouse hippocampus quiescent neural stem cells and a local circuitry mechanism that control the activation and self-renewal mode of quiescent adult neural stem cells in response to neuronal activity and experience. It is unknown whether local neuronal circuitry of the human brain has a direct impact on adult hippocampus renewal neural stem cells. Here, by following to the Universal X-structure method, we show that X-characteristics of the dendrites branching of the newly discovered human hippocampus renewal neural stem cells have extensive areas of overlap with of as the adult mouse hippocampus quiescent neural stem cells, and interneuron X-characteristics. It's hoped that these researches will come closer to solution of vital regeneration of the human brain nerve cells.

Keywords: neural stem cells regeneration, universal X-structure

INTRODUCTION

The prevalence of injuries of nerves and lack of knowledge about the mechanisms of peripheral nerve fibers determine the actuality of the problem. After nerve injury Schwann cells - glial cells: lemmocites in the distal end, form the band structures consisting of chains of lemmocites and define the ways in which occurs the regeneration of axons. Length of growing axons defines the degree of nerve regeneration [1].

Development Neurobiology in the early 1990's led to the discovery of the "newborn" neurons in the brain of adult rats and mice. They are found predominantly in the evolutionarily ancient parts of the brain: the olfactory bulbs and cortex hippocampus, which are primarily for emotional behavior, response to stress and the regulation of reproductive function in mammals.

What is actually happening with the nerve cells and how the regeneration of nerve tissue can be determined directly for a snapshot of the stem cells of the hippocampus (green) of the brain (see fig. 1) after processing by the method of Universal X-structure.

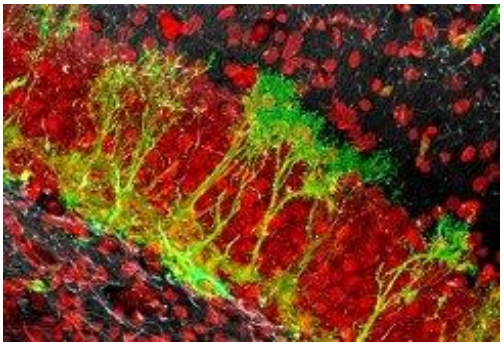

Figure 1. Stem cells (green) and neural nuclei (red) in the hippocampus, an area of the brain responsible for cognitive functions (see also [1]): web-side:http://brainant.net/magazine/нервные-клетки-не-восстанавливаются/

Theoretical study of cellular structures by the method of universal X-structure [2] is based on the universality of soliton (soliton axon nervous system in Squid [3]) the mechanism of transport of ions: the basis for synergic such spontaneous open systems based on linear relationship between the potentials and currents, the fair is not only static but also in quasi-stationary processes motion of solitons multicomponent systems [4]. The free energy F = E-TS, where E is the energy, T is the temperature, S is the entropy of a system at constant temperature (and energy) has the following property that is common not only to warm-blooded creatures but also to geotectonic. In such systems is minimizing entropy production

$$\frac{dS}{dt} \to Min > 0.$$

From the definition of free energy then it follows that

$$\frac{dF}{dt} = -T\frac{dS}{dt} < 0$$

it leads to maximize output

$$\frac{dF}{dt} \to Max.$$

This is the geotectonic. This is true for humans, because it requires a maximum increment of negentropy[1] (Negentropy: S_{max} - S) that means a maximum of information gain.

A "Ridge" (garden) (the author's term) of 10 resonant peaks quantum X-structure [2, 5] is also formed on the scale of cellular structures in nonlinear Schrödinger equation not Gaussian type. The solitons multicomponent systems width scale is defined as L = 4D/(μE) = 0.1T/E where D - diffusion coefficient, μ - mobility of ions, E [V/cm] - an electric field, T - the temperature in units of the temperature in normal condition. There was used Einstein's relationship between the diffusion coefficient and mobility. L = 10 nm (for the cell membrane field E = 100 kV/cm and may be increase up virus's scales and cells. Above linear relationship between the potentials and currents is due to the solitons multicomponent systems nonlinearities. There is a third approach, a prototype X-structure [2]-the distribution in the form of a series of peaks occurs in task initiation of electrical breakdown in the cavitations' scale 2 nm in the electric field of the cell membrane based on the tetrahedron structure of water. The similarity of these structures "Ridge" is apparently a common nature of data

[1]In 1944, E. Schrödinger, concluded that biological systems to its existence must be extracted from environment negative entropy, to compensate for the domestic production of entropy and thus shy away from thermodynamic equilibrium, the State of death (Schrödinger, Erwin, *What is Life - the Physical Aspect of the Living Cell*, Cambridge University Press, 1944). Web-site: https://ru.wikipedia.org/wiki/Negentropy.

of critical phenomena in terms of scale invariance. The Universal X-structure based on the theorem of Gauss [4] allows for the statistical processing of the data cell distributions according to the number of cells in the venues section of fabric. It appears that, at this stage, some differences in the details form peaks are inconsequential. Method validated on wheat and poppy seeds, virus, triangular bacteria, and in others. Usually commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells. This value is due to density gradient on exterior of cell nucleus which is a jump of fracture-loosening of the brain tissue. In another hand there is not a nucleus in triangular bacteria. Because of this the X-structure is the longest and well matches the theoretical curve.

When applied to the task method Universal X-structure has been adapted accordingly the above characteristics of the regeneration of cells and General properties of stem cells:

Neural stem cells (NSCs) are self-renewing, multipotent cells that generate the main phenotype of the nervous system. Stem cells are characterized by their capability to differentiate into multiple cell types via exogenous stimuli from their environment. They undergo asymmetric cell division into two daughter cells, one non-specialized and one specialized. NSCs primarily differentiate into neurons, astrocytes, and oligodendrocytes. Adult NSCs were first isolated from mouse striatum in the early 1990s. They are capable of forming multipotent neurospheres when cultured in vitro. Neurospheres can produce self-renewing and proliferating specialized cells. These neurospheres can differentiate to form the specified neurons, glial cells, and oligodendrocytes. Quiescent stem cells are Type B that are able to remain in the quiescent state due to the renewable tissue provided by the specific niches composed of blood vessels, astrocytes, microglia, ependymal cells, and extracellular matrix present within the brain. These niches provide nourishment, structural support, and protection for the stem cells until they are activated by external stimuli. Once activated, the Type B cells develop into Type C cells, active proliferating intermediate cells, which then divide into neuroblasts consisting of Type A cells. The undifferentiated neuroblasts form chains that migrate and develop into mature neurons. In the olfactory bulb, they mature into GABAergic granule neurons, while in the hippocampus they mature into dentate granule cells [web-side: http://en.wikipedia.org/wiki/Neural_stem_cell].

With the right mix of nutrients and a little bit of coaxing, human stem cells derived from skin can assemble spontaneously into brain-like chunks of tissue. Researchers provide the first description and application of these ‘mini-brains’ today in Nature2. The pea-sized neural clumps developed in this work could prove useful for researching human neurological diseases. Under a microscope, researchers saw discrete brain regions that seemed to interact with one another. But the overall arrangement of the different proto-brain areas varied randomly across tissue samples - amounting to no recognizable physiological structure. The entire structure is not like one brain such as normal brain maturation in an intact embryo is probably guided by growth signals from other parts of the body. The tissue balls also lacked blood vessels, which could be one reason that their size was limited to 3-4 millimeters in diameter, even after growing for 10 months or more.

To find out which neurotransmitter brain stem cells can detect, the researchers [6] took mouse brain tissue, attached electrodes to the stem cells and measured any change in electrical charge after

[2]Lancaster, M. A. et al. *Nature* http://dx.doi.org/10.1038/nature12517 (2013).

the addition of certain neurotransmitters. When they treated the stem cells with the neurotransmitter GABA - a known signal-inhibiting product the stem cells' electrical charges changed, suggesting that the stem cells can detect GABA messages.

To find out what message GABA imparts to brain stem cells, the scientists used a genetic trick to remove the gene for the GABA receptor - the protein on the surface of the cell that detects GABA - only from the brain stem cells. Microscopic observation of brain stem cells lacking the GABA receptor over five days showed these cells replicated themselves, or produced glial cells - support cells for the neurons in the brain. Brain stem cells with their GABA receptors intact appeared to stay the same, not making more cells.

The brain stem cell population in mice (and other mammals, including humans) is surrounded by as many as 10 different kinds of intermingled neurons, and any number of these may be keeping stem cells dormant. To find out which neurons control the stem cells, the researchers inserted special light-activating proteins into the neurons that trigger the cells to send an electrical pulse, as well as to release neurotransmitter, when light shines on them. By shining light to activate a specific type of neuron and monitoring the stem cells with an electrode, Song's team showed that one of the three types of neurons tested transmitted a signal to the stem cells causing a change in electrical charge in the stem cells. The neurons messaging the stem cells are parvalbumin-expressing interneurons.

Finally, to see if this stem cell control mechanism aligns with what an animal may be experiencing, the scientists created stress for normal mice by socially isolating them, and did the same in mice lacking GABA receptors in their brain stem cells. After a week, socially isolated normal mice had an increase in the number of stem cells and glial cells. But the socially isolated mice without GABA receptors did not show increases.

X-structure

Structure of stem cells (green) in fig. 1 of 10 an axon bushes in the fabric of neural nuclei (red) the "root" system. A lot of this can be found with the picture of the development of streamers-electrodiffusion solitons of electrical pre-breakdown processes. To establish that this is the "Ridge" is aggregated for each individual axon. The numbering of axons performed from right to left. Number 1 is assigned to the first fully shown in the picture. The number of stem cells in Layer N height of an axon Bush was determined by area they occupy in the layer. Stem cells placed in between nuclei neurons. Therefore their distribution is the distribution of degree of branching germination of stem cells in brain tissue (as Degree of fracturing, loosening of the brain tissue). Accordingly the above the characteristic length of the regeneration of cells there is also a degree of fracturing as the degree of branching of an axon. Layer thickness: 1 mm. Bottom of an axon Bush (unless specified) usually given the value 50% degree of branching germination of an axon (as for a jump of density at the transition from neuron nucleus to the regenerating axon), and the length (also, unless specified otherwise) is equal to 42 km of the neuron core length of the curve X-structure. Below in the table 1-5 given the results.

Table I. Distribution of degree of branching of stem cells under No 1 in the hippocampus (the human brain) on fig. 1 compared with the curv of fracture-loosening Universal Geo-space X-structure (solid curve) to the reduced length *H* in km, from the bottom up

Sr. No.	***A*[1]**	***B*[2]**	***C*[3]**	***D*[4]**	***E*[5]**
1	1	17	253.5	44	54.2
2	2	13	236.5	43.2	50.6
3	3	13	223.5*	42.4*	47.8*
4	4	7	210.5	41.6	45.0
5	5	13	203.5	40.8	43.5
6	6	7	190.5	40	40.7
7	7	5	183.5	39.2	39.2
8	8	5	178.5	38.4	38.2
9	9	3	173.5	37.6	37.1
10	10	2	170.5	36.8	36.5
11	11	2	168.5	36	36.0
12	12	2	166.5	35.2	35.6
13	13	2	164.5	34.4	35.2
14	14	2	162.5	33.6	34.8
15	15	2	160.5	32.8	34.3
16	16	2	158.5	32	33.9
17	17	2	156.5	31.2	33.5
18	18	2	154.5	30.4	33.0
19	19	2	152.5	29.6	32.6
20	20	2	150.5	28.8	32.2
21	21	2	148.5	28	31.8
22	22	3	146.5	27.2	31.3
23	23	3	143.5	26.4	30.7
24	24	4	140.5	25.6	30.0
25	25	2.5	136.5	24.8	29.2
26	26	3	134	24	28.6
27	27	4	131	23.2	28.0
28	28	3	127	22.4	27.2
29	29	6	124	21.6	26.5
30	30	4	118	20.8	25.2
31	31	4.5	114	20	24.4
32	32	2	109.5	19.2	23.4
33	33	2	107.5	18.4	23.0
34	34	1.5	105.5	17.6	22.6
35	35	1.5	104	16.8	22.2
36	36	3.5	102.5	16	21.9

37	37	1	99	15.2	21.2
38	38	1	98	14.4	21
39	39	1.5	97	13.6	20.7
40	40	1	95.5	12.8	20.4
41	41	1.5	94.5	12	20.2
42	42	4	93	11.2	19.9
43	43	5	89	10.4	19.0
44	44	10	84	9.6	18.0
45	45	13	74	8.8	15.8
46	46	12	61	8	13.0
47	47	9	49	7.2	10.5
48	48	3.5	40	6.4	8.6
49	49	8.5	36.5	5.6	7.8
50	50	8	28	4.8	6.0
51	51	8.5	20	4	4.3
52	52	5	11.5	3.2	2.5
53	53	4	6.5	2.4	1.4
54	54	0.5	2.5	1.6	0.5
55	55	2	2	0.8	0.4

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of an axon Bush up to current length

D^4 is reduced height (length) of a layer N, km M: 1 mm: 0.8 km

E^5 is degree of branching germination of stem cells in brain tissue (as Degree of fracturing, loosening of the brain tissue) %

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells.

Curve of fracture-loosening Universal Geo-space X-structure (solid curve in Fig. 1) to the reduced length in kilometers is a set of points (United direct) with its coordinates

P_X 0 1.3 2 5 6 7 10 13.6 13.6 29.6 30 38 45 47 62 62 82 82 92 100

H, km 4 4 9 10 11 16 17 20 24 30 33 35 38 41 48 53 64 70 76 80

The line (crosses) of an axon Bush No. 1 well matches the theoretical curve from 30 km and above. The essential 10-15% difference on degree of branching germination of stem cells in brain tissue is near the peak of the dendrite as it show in fig. 2.

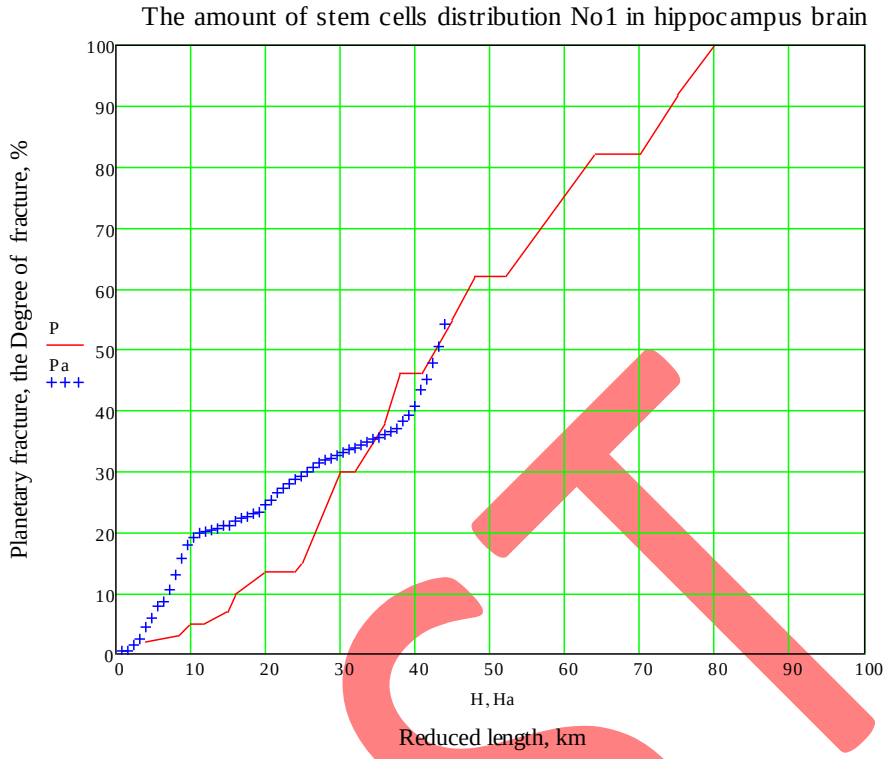

Figure 2. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of stem cells No 1 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

Table II. Distribution of degree of branching of stem cells under No 3 in the hippocampus (the human brain) on fig. 1 compared with the curv of fracture-loosening Universal Geo-space X-structure (solid curve) to the reduced length *H* in km, from the bottom up

Sr. No.	A^1	B^2	C^3	D^4	E^5
1	1	1.5	267	44	48.5
2	2	2.5	265.5	43.2	48.3
3	3	4	263*	42.4*	47.8*
4	4	4	259	41.6	47.1
5	5	5	255	40.8	46.3
6	6	3	250	40	45.4
7	7	3.5	247	39.2	44.9
8	8	1	243.5	38.4	44.3
9	9	1	242.5	37.6	44.1
10	10	1	241.5	36.8	43.9
11	11	1	240.5	36	43.7
12	12	1	239.5	35.2	43.5
13	13	1	238.5	34.4	43.4
14	14	1	237.5	33.6	43.2
15	15	1	236.5	32.8	42.8
16	16	1	235.5	32	42.6

17	17	1	234.5	31.2	42.6
18	18	1.5	233.5	30.4	42.6
19	19	2	232	29.6	42.4
20	20	2	230	28.8	41.8
21	21	2	228	28	41.4
22	22	2	226	27.2	41.1
23	23	2	224	26.4	40.7
24	24	2	222	25.6	40.3
25	25	2	220	24.8	40
26	26	2	218	24	39.6
27	27	2	216	23.2	39.3
28	28	2.5	214	22.4	38.9
29	29	2.5	211.5	21.6	38.4
30	30	3	209	20.8	38
31	31	3	206	20	37.4
32	32	5	203	19.2	36.5
33	33	6.5	198	18.4	36
34	34	9	191.5	17.6	34.8
35	35	13	182.5	16.8	33.2
36	36	10	169.5	16	30.8
37	37	9	159.5	15.2	29
38	38	9	150.5	14.4	27.4
39	39	15	141.5	13.6	25.7
40	40	17	126.5	12.8	23
41	41	14	109.5	12	19.9
42	42	15	95.5	11.2	17.4
43	43	15	80.5	10.4	14.6
44	44	15	65.5	9.6	11.9
45	45	11	50.5	8.8	9.2
46	46	8	39.5	8	7.2
47	47	10	31.5	7.2	5.7
48	48	9	21.5	6.4	3.9
49	49	5	12.5	5.6	2.3
50	50	4	7.5	4.8	1.4
51	51	3	3.5	4	0.6
52	52	0.5	0.5	3.2	0.4

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching (Degree of fracturing, loosening) stem cells %

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells.

In this case, as can be seen from fig. 2, a good compliance with the theoretical curve is achieved at the base of the dendrite Bush and somewhat weaker in his Crown. This kind of consistency I usually attribute to crater structures. But No 3 bushes and dendrite No 5 twisted crowns, it is impossible to separate them. The same can be said of dendrite Bush No. 5, considered below.

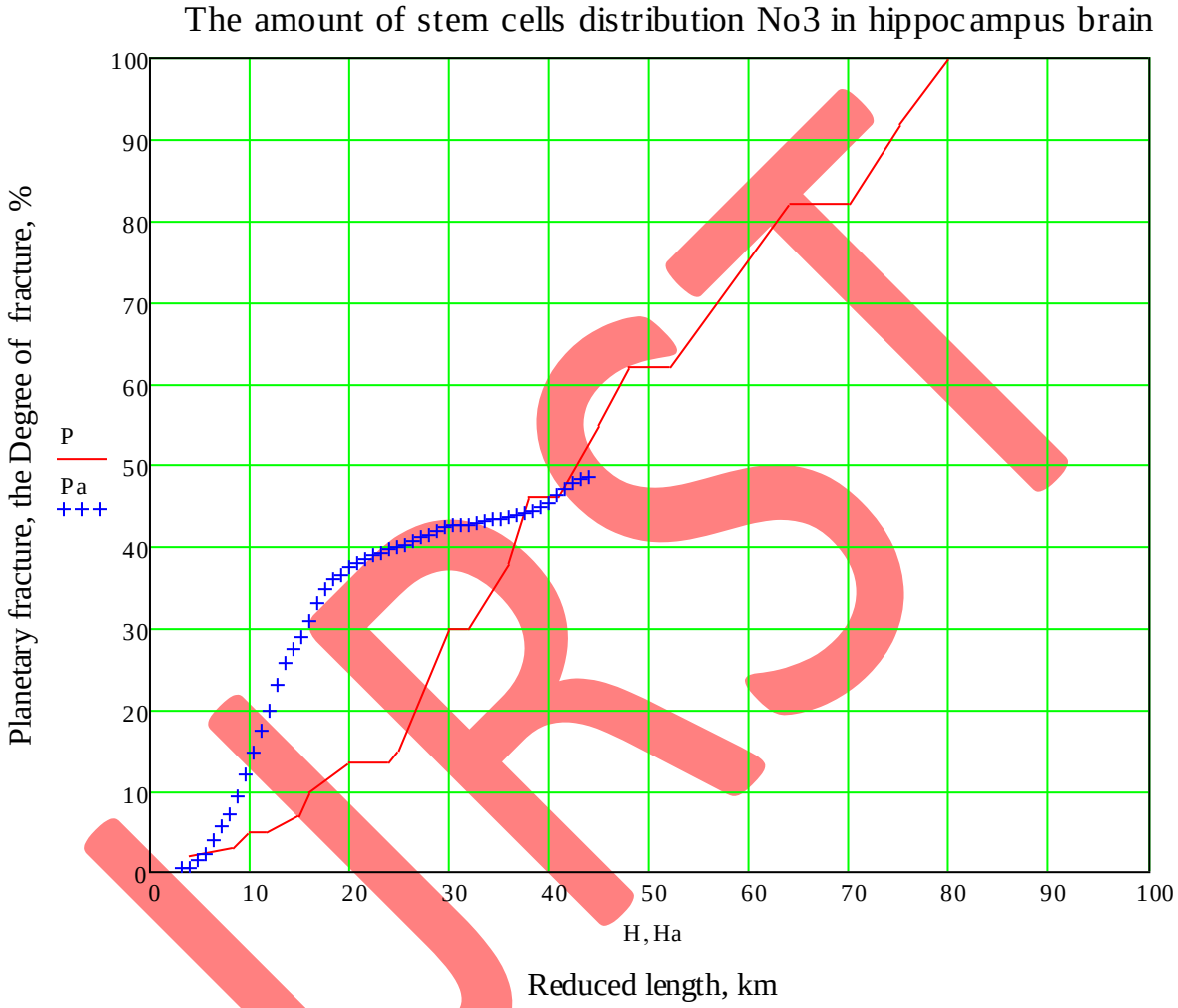

Figure 3. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of stem cells No 3 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

Table III. Distribution of degree of branching of stem cells under No 5 in the hippocampus (the human brain) on fig. 1 compared with the curv of fracture-loosening Universal Geo-space X-structure (solid curve) to the reduced length *H* in km, from the bottom up

Sr. No.	A^1	B^2	C^3	D^4	E^5
1	1	2	267	44	48.
2	2	1	265	43.2	48
3	3	0.5	264*	42.4*	47.8*
4	4	2	263.5	41.6	47.7

5	5	3	261.5	40.8	47.3
6	6	4	258.5	40	46.8
7	7	4	254.5	39.2	46.1
8	8	2.5	250.5	38.4	45.4
9	9	3	248	37.6	44.9
10	10	2	245	36.8	44.4
11	11	3	243	36	44
12	12	3	240	35.2	43.5
13	13	3	237	34.4	42.9
14	14	2.5	234	33.6	42.4
15	15	1.5	231.5	32.8	41.9
16	16	2	230	32	41.6
17	17	2.5	228	31.2	41.3
18	18	2	225.5	30.4	40.8
19	19	1.5	223.5	29.6	40.6
20	20	2	222	28.8	40.2
21	21	2	220	28	39.8
22	22	2	218	27.2	39.5
23	23	2	216	26.4	39.1
24	24	2	214	25.6	38.8
25	25	2	212	24.8	38.4
26	26	2	210	24	38
27	27	2	208	23.2	37.7
28	28	2.5	206	22.4	37.3
29	29	2	203.5	21.6	36.8
30	30	2	201.5	20.8	36.5
31	31	3.5	199.5	20	36.1
32	32	4	196	19.2	35.5
33	33	2	192	18.4	34.8
34	34	2	190	17.6	34.4
35	35	2	188	16.8	34
36	36	1	186	16	33.7
37	37	6	185	15.2	33.5
38	38	8	179	14.4	32.4
39	39	10	171	13.6	31
40	40	11	161	12.8	29.2
41	41	11	150	12	27.2
42	42	13	139	11.2	25.2
43	43	14	126	10.4	22.8
44	44	12	112	9.6	20.3
45	45	12	100	8.8	18.1

46	46	12	88	8	16
47	47	12	76	7.2	13.8
48	48	10	64	6.4	11.6
49	49	12	54	5.6	9.8
50	50	11	42	4.8	7.6
51	51	11	31	4	5.6
52	52	9	20	3.2	3.6
53	53	6	11	2.4	2
54	54	3	5	1.6	0.9
55	55	2	2	0.8	0.4

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching (Degree of fracturing, loosening) stem cells %

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells.

The line (crosses) of an axon Bush No. 5 well matches the theoretical curve from 30 km and above as it show in fig. 4.

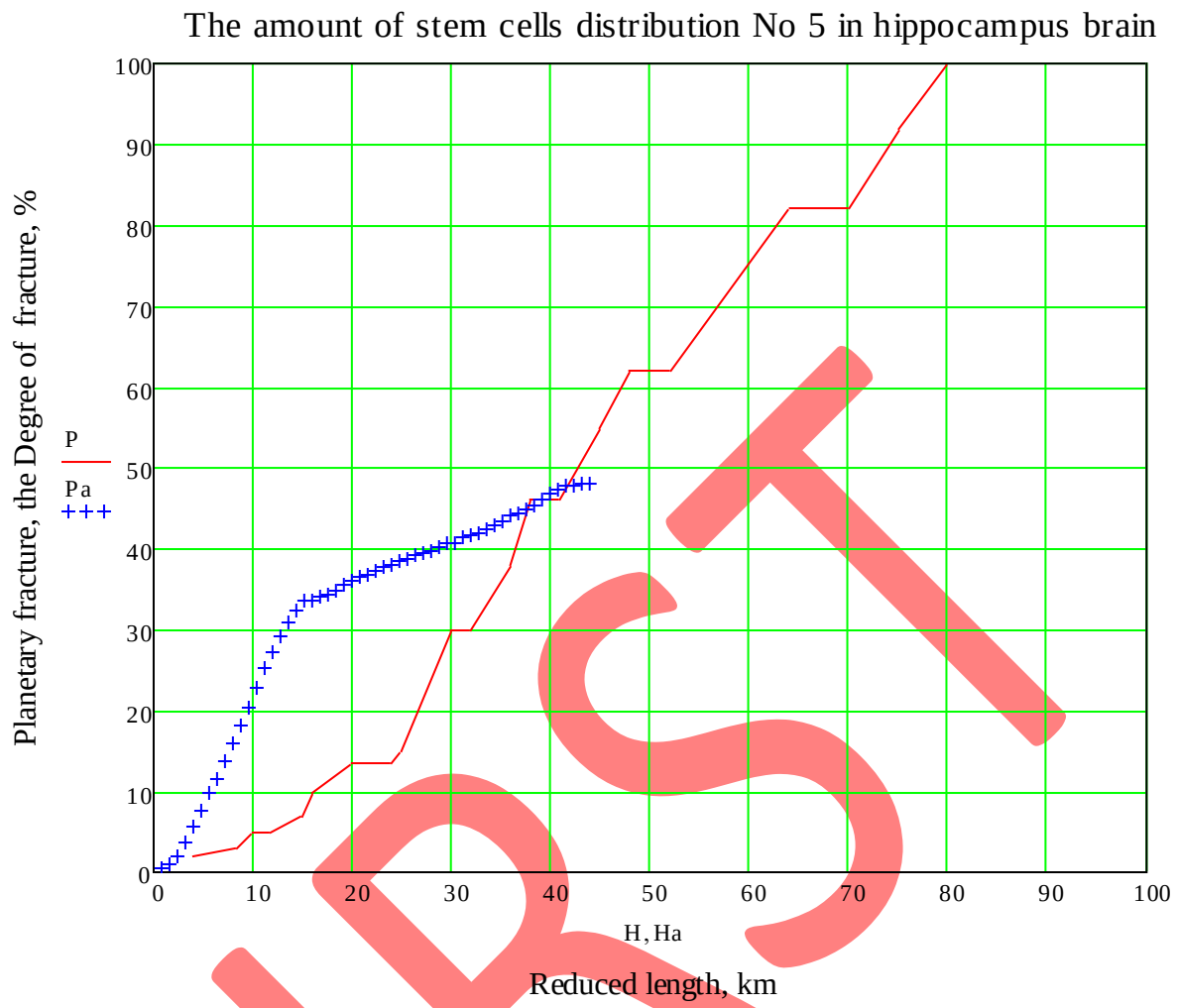

Figure 4. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of stem cells No 5 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

Table IV. Distribution of degree of branching of stem cells under No 6 in the hippocampus (the human brain) on fig. 1 compared with the curv of fracture-loosening Universal Geo-space X-structure (solid curve) to the reduced length *H* in km, from the bottom up

Sr. No.	A^1	B^2	C^3	D^4	E^5
1	1	5	191	46.4	53.1
2	2	4	186	45.6	51.7
3	3	2	182	44.8	50.6
4	4	4	180	44	50
5	5	4	176	43.2	48.9
6	6	5	172*	42.4*	47.8*
7	7	4	167	41.6	46.4
8	8	5	163	40.8	45.3
9	9	5	158	40	43.9
10	10	6	153	39.2	42.5

11	11	3	147	38.4	40.9
12	12	6	144	37.6	40
13	13	5	138	36.8	38.4
14	14	3	133	36	37
15	15	4	130	35.2	36.1
16	16	4	126	34.4	35
17	17	4	122	33.6	33.9
18	18	2	118	32.8	32.8
19	19	2	116	32	32.2
20	20	2.5	114	31.2	31.7
21	21	2.5	111.5	30.4	31
22	22	2	109	29.6	30.3
23	23	3	107	28.8	29.7
24	24	2	104	28	28.9
25	25	4	102	27.2	28.3
26	26	4	98	26.4	27.2
27	27	3	94	25.6	26.1
28	28	3	91	24.8	25.3
29	29	2	88	24	24.4
30	30	2	86	23.2	23.9
31	31	1	84	22.4	23.3
32	32	2	83	21.6	23
33	33	1	81	20.8	22.5
34	34	4	80	20	22.2
35	35	4	76	19.2	21.1
36	36	3	72	18.4	20
37	37	8	69	17.6	19.2
38	38	9	61	16.8	17
39	39	3	52	16	14.5
40	40	3	49	15.2	13.6
41	41	3	46	14.4	12.8
42	42	2	43	13.6	12
43	43	6	41	12.8	11.4
44	44	5	35	12	9.7
45	45	6	30	11.2	8.3
46	46	6	24	10.4	6.7
47	47	3	18	9.6	5
48	48	3	15	8.8	4.2
49	49	2	12	8	3.3
50	50	2	10	7.2	2.8
51	51	2	8	6.4	2.2

52	52	2	6	5.6	1.7
53	53	1	4	4.8	1.1
54	54	0.5	3	4	0.8
55	55	0	2.5	3.2	0.7
56	56	1	2.5	2.4	0.7
57	57	1	1.5	1.6	0.4
58	58	0.5	0.5	0.8	0.1

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching (Degree of fracturing, loosening) stem cells %

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells.

This case (see fig. 5) as for dendrite Bush No 1 very closely matches the theoretical curve at the base and up to 35 km. The standard deviation was on the reduced length-0.36 ± 2 km, almost within the margin of error range 1.5 km; and according to the degree of fracture - degree of branching (here characterized the growth of stem cells) 0.14 ± 3%. The line (crosses) of an axon Bush No. 6 well matches the theoretical curve from 0 km and above as it show in fig. 5.

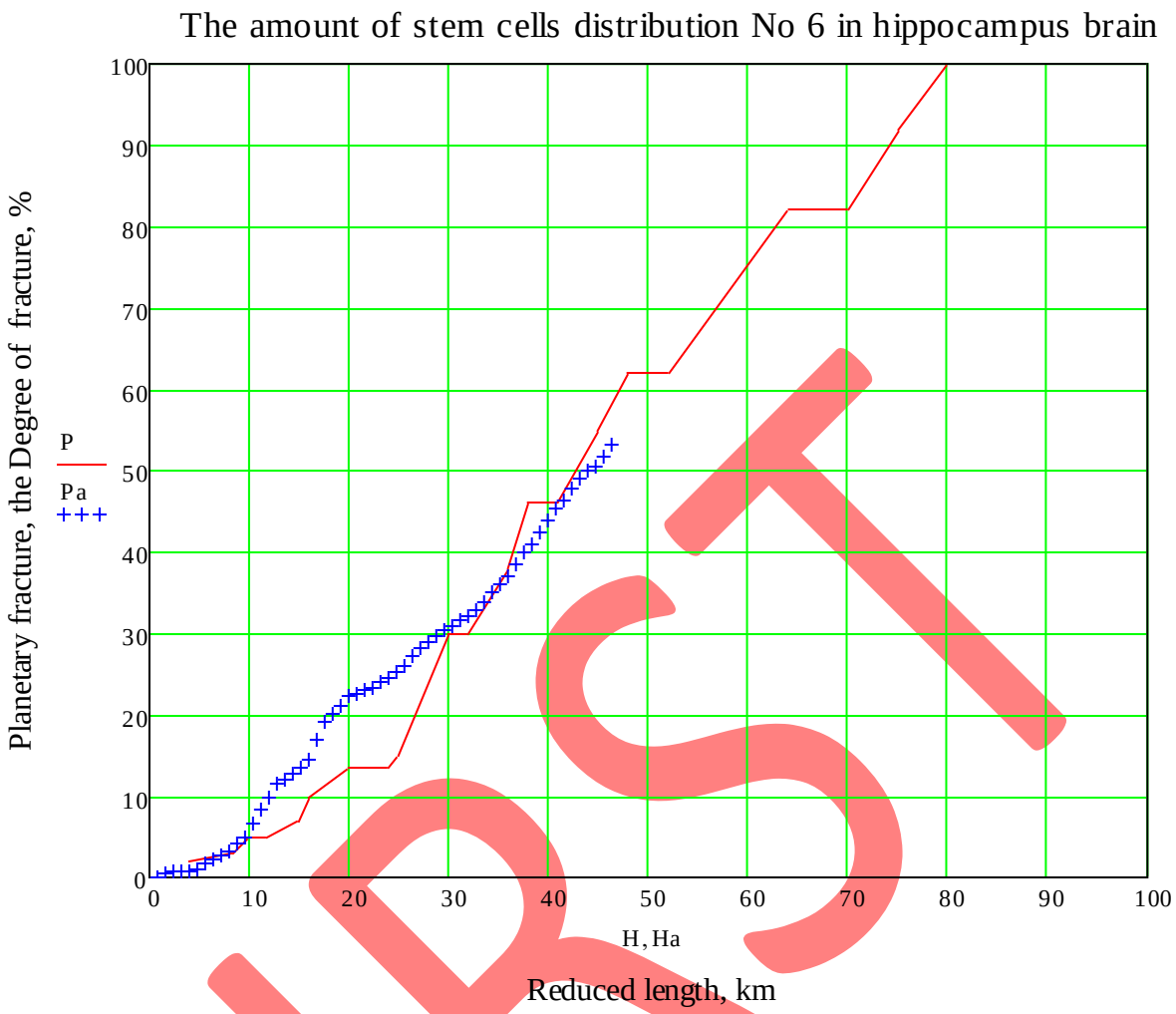

Figure 5. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of stem cells No 6 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

Table V. Distribution of degree of branching of stem cells under No 7 in the hippocampus (the human brain) on fig. 1 compared with the curv of fracture-loosening Universal Geo-space X-structure (solid curve) to the reduced length *H* in km, from the bottom up

Sr. No.	A^1	B^2	C^3	D^4	E^5
1	1	2.5	101.5	44	49.5
2	2	1	99	43.2	48.3
3	3	4	98*	42.4	47.8
4	4	6.5	94	41.6	45.8
5	5	4	87.5	40.8	42.7
6	6	3	83.5	40	40.7
7	7	6	80.5	39.2	39.3
8	8	3	74.5	38.4	36.3
9	9	3	71.5	37.6	34.9
10	10	3	68.5	36.8	33.4

11	11	2	65.5	36	32.1
12	12	1.5	63.5	35.2	31.0
13	13	5	62	34.4	30.2
14	14	3.5	57	33.6	27.8
15	15	3	53.5	32.8	26
16	16	2	50.5	32	24.6
17	17	1	48. 5	31.2	23.7
18	18	2	47.5	30.4	23.2
19	19	1.5	45.5	29.6	22.2
20	20	1	44	28.8	21.5
21	21	0.5	43	28	21
22	22	1	42.5	27.2	20.7
23	23	1.5	41.5	26.4	20.2
24	24	1	41	25.6	20.0
25	25	1.5	40	24.8	19.5
26	26	3	38.5	24	18.8
27	27	2	35.5	23.2	17.3
28	28	1	33.5	22.4	16.3
29	29	1	32.5	21.6	15.8
30	30	1.5	31.5	20.8	15.4
31	31	1	30	20	14.6
32	32	3	29	19.2	14.2
33	33	0	26	18.4	12.7
34	34	3	26	17.6	12.7
35	35	1.5	23	16.8	11.2
36	36	2	21.5	16	10.5
37	37	2	19.5	15.2	9.5
38	38	3	17.5	14.4	8.6
39	39	2	14.5	13.6	7.1
40	40	3	12.5	12.8	6.1
41	41	2	9.5	12	4.6
42	42	2	7.5	11.2	3.7
43	43	5	5.5	10.4	2.7
44	44	0.5	0.5	9.6	0.24

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching (Degree of fracturing, loosening) stem cells %

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells

The line (crosses) of an axon Bush No 7 well matches the theoretical curve from 0 km and above as it show in fig. 6.

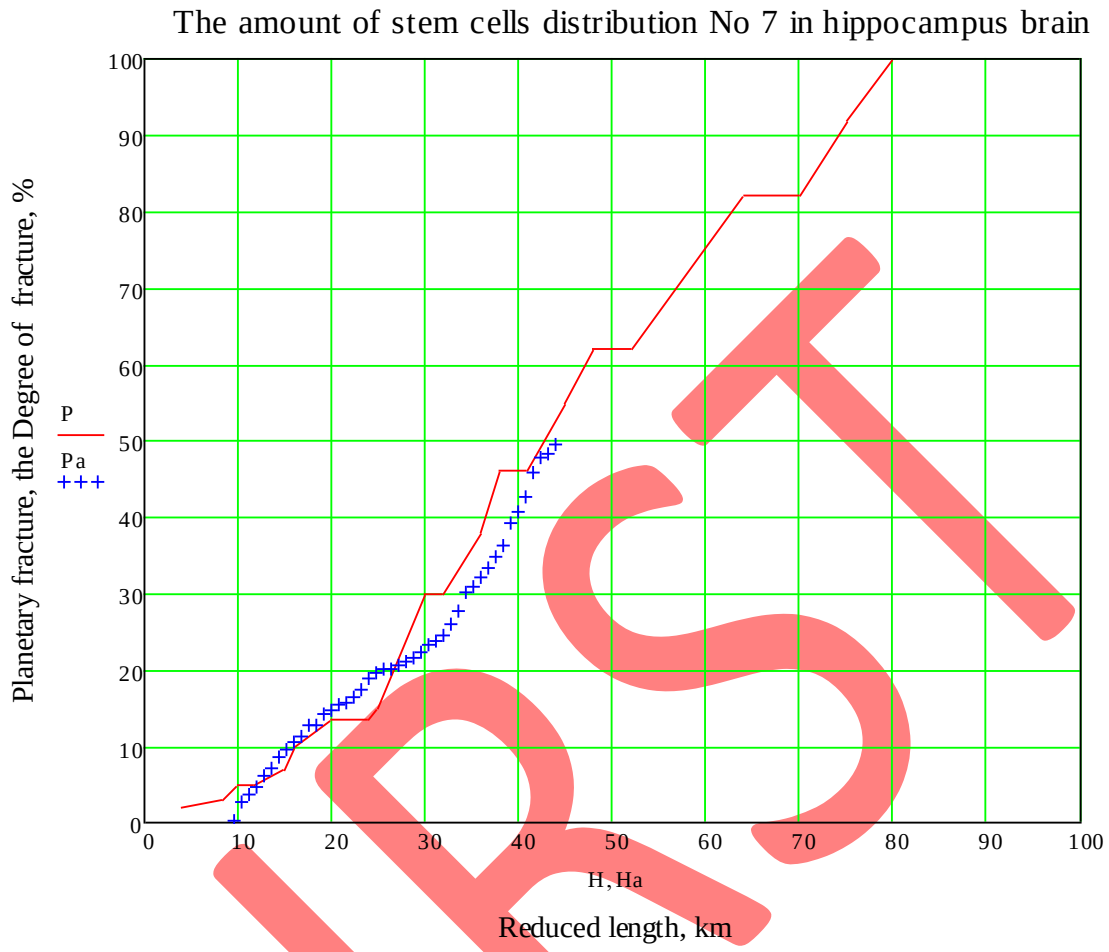

Figure 6. A degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of stem cells No 7 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

An axon bushes No 6-7 very closely matches the theoretical curve, also No 1 and no dendrite bushes No 3 and 5.

DISCUSSION

This method allows for a snapshot of the surface or on the section to build the distribution of degree of branching germination of stem cells in brain tissue (as Degree of fracturing, loosening of the protein structure) that reflects the level of branching germination of the axon dendrites of a neuron according to the degree of nerve regeneration [1]. This is an inverse problem as in the x-ray structural analysis. Features of the approach: pilot point do not necessarily fall on the theoretical curve due to the peculiarities of their situation, the presence of contaminants, etc. But when it does, it only remains to this identity with the theory of recognition. There we show on fig. 7 features of the degree of branching germination of mouse stem cells [5] in brain tissue (as Degree of fracturing, loosening of the brain tissue).

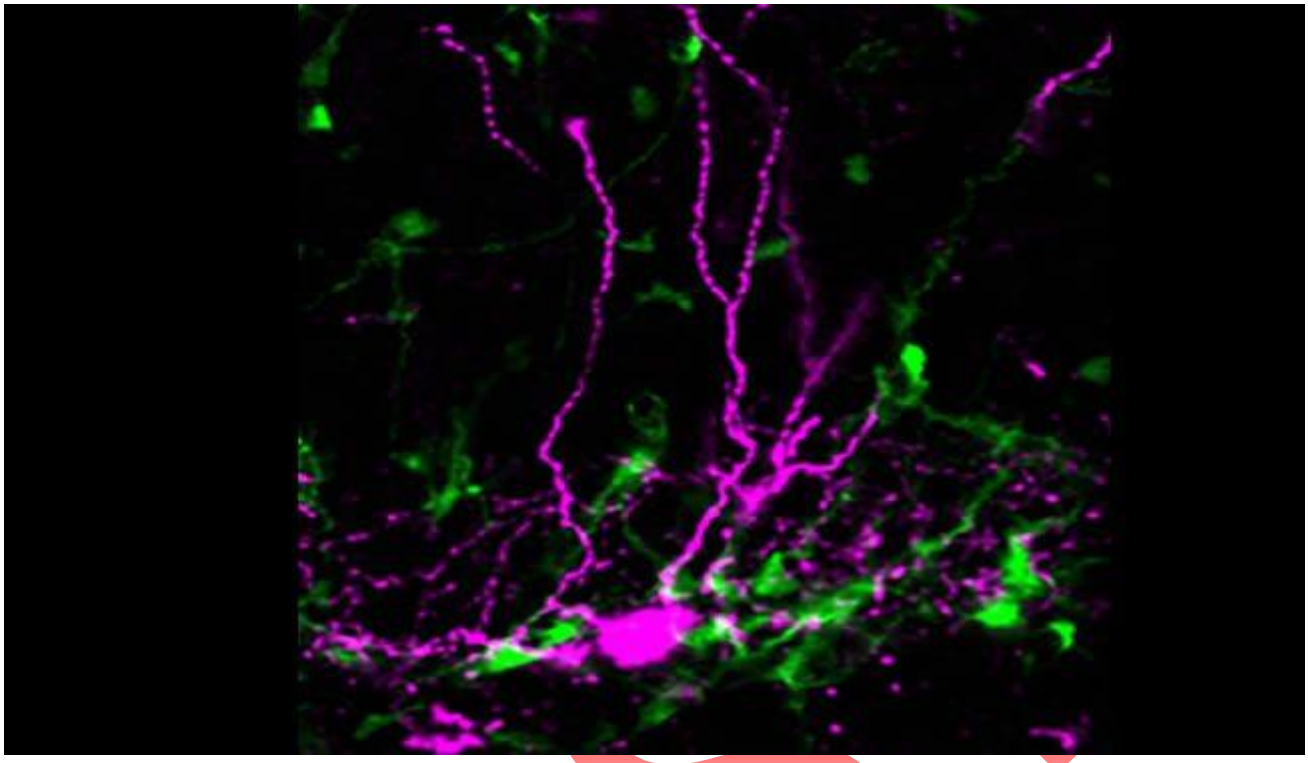

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Figure 7. Degree A single parvalbumin-expressing interneuron (red/pink) surrounded by many adult neural stem cells (green) in the brain's hippocampus. Image adapted from Johns Hopkins Medicine image credited to Gerry Sun. Web-sait: http://neurosciencenews.com/radial-glia-like-neural-stem-cells-hippocampus-neurogenesis-gabba

Table VI. Distribution patterns of neuronal stem cells (green) in mouse on photo [5] (see fig. 7) compared with the curve of degree of the brain tissue fractures-loosening Universal Geo-space X-structure (solid curve) to reduced length in km (1 mm = 1 km), defined by photo from the bottom up

Sr. No.	A^1	B^2	C^3	D^4	E^5
1	1	19,5	489,5	42	51.4
2	2	18,5	470	-	-
3	3	18	456.5	-	-
4	4	25,5	438,5*	39.8	46
5	5	25,5	413	-	-
6	6	31	387.5	-	-
7	7	27	357.5	37.6	37.5
8	8	30	330.5	-	-
9	9	24	300.5	-	-
10	10	18	276.5	35.4	29
11	11	18	258.5	-	-
12	12	9	240.5	-	-
13	13	13,5	231,5	33.2	24.3
14	14	10,5	217	-	-
15	15	13,5	206,5	-	-

16	16	13,5	193	31	20.2
17	17	12	179,5	-	-
18	18	13,5	167,5	-	-
19	19	13,5	154	28.8	16.2
20	20	15	140.5	-	-
21	21	13,5	125.5	-	-
22	22	12	112	26.6	11.8
23	23	9	100	-	-
24	24	9	91	-	-
25	25	10,5	82	24.4	8.6
26	26	7	71.5	-	-
27	27	7,5	64.5	-	-
28	28	3	57	22.2	6
29	29	6	54	-	-
30	30	9	48	-	-
31	31	9	39	20.0	4.1
32	32	6	30	-	-
33	33	3	24	-	-
34	34	3	21	17.8	2.2
35	35	3	18	-	-
36	36	3	15	-	-
37	37	3	12	15.6	1.3
38	38	3	9	-	-
39	39	3	6	-	-
40	40	3	3	13.4	0.3

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching germination of stem cells in brain tissue (as Degree of fracturing, loosening of the brain tissue) %.

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells 44% at 36 km.

Table VII. Distribution patterns of the single mouse interneuron (red) on photo [5] (see fig. 7) compared with the curve of degree of branching fractures-loosening Universal Geo-space X-structure (solid curve) to reduced length in km (1 mm = 1 km), defined by photo from the bottom up

Sr. No.	***A*[1]**	***B*[2]**	***C*[3]**	***D*[4]**	***E*[5]**
1	1	17,5	17,5	46.6	61.8
2	2	25,5	43	-	-
3	3	34,5	77,5	-	-

4	4	32,5	110	44.4	55.2
5	5	28,5	138,5	-	-
6	6	25,5	164	-	-
7	7	21,5	185,5	42*	47,8*
8	8	21	206,5	-	-
9	9	21	227,5	-	-
10	10	24	251	39.8	42.4
11	11	21	272	-	-
12	12	15,5	288	-	-
13	13	16,5	304,5	37.6	37.3
14	14	22	326,5	-	-
15	15	16,5	343	-	-
16	16	16,5	359,5	35.4	32.6
17	17	18	377,5	-	-
18	18	18	395,5	-	-
19	19	13,5	409	33.2	28.1
20	20	15,5	414,5	-	-
21	21	16,5	431	-	-
22	22	15	446	31	24.2
23	23	10,5	456,5	-	-
24	24	9,5	466	-	-
25	25	13,5	480,5	28.8	20.8
26	26	9	497	-	-
27	27	7,5	502,5	-	-
28	28	5,5	507	26.6	18.3
29	29	4,5	511,5	-	-
30	30	4,5	517	-	-
31	31	5,5	526	24.4	17
32	32	9	532	-	-
33	33	6	538	-	-
34	34	6	544	22.2	15.3
35	35	6	550	-	-
36	36	6	556	-	-
37	37	6	562	20.0	13.8
38	38	6	568	-	-
39	39	6	574	-	-
40	40	6	580	17.8	12.2
41	41	6	586	-	-
42	42	6	592	-	-
43	43	6	598	15.6	10.7
44	44	6	604	-	-

45	45	6	610	-	-
46	46	6	616	13.4	9.2
47	47	6	622	-	-
48	48	6	628	-	-
49	49	6	634	11.2	7.7
50	50	6	640	-	-
51	51	6	646	-	-
52	52	6	652	9.0	6.1
53	53	6	658	-	-
54	54	6	664	-	-
55	55	6	670	6.8	4.6
56	56	6	676	-	-
57	57	6	682	-	-
58	58	6	688	4.6	3.1
59	59	6	694	-	-
60	60	6	700	-	-
61	61	6	706	2.4	1.5
62	62	6	712		
63	63	6	718		

A^1 is height of the layer, mm

B^2 is the number N of stem cells in Layer - area, mm^2

C^3 is the amount of N in all segments from the base of the dendrite Bush up to current length

D^4 is reduced height (length) of a layer N, km

E^5 is degree of branching germination of stem cells in brain tissue (as Degree of fracturing, loosening of the brain tissue) %.

* commit point scale X-structure curve P (H) the exact value of the 47.8% at 42.4 km of distribution of the degree of branching germination of stem cells 49,0% at 36 km.

Distribution patterns of neuronal stem cells (green) in mouse on photo [5] (see fig. 7) compared with the curve of degree of the brain tissue fractures-loosening Universal Geo-space X-structure (solid curve) to reduced length in km (1 mm = 1 km), defined by photo from the bottom up table VI are shown on fig. 8.

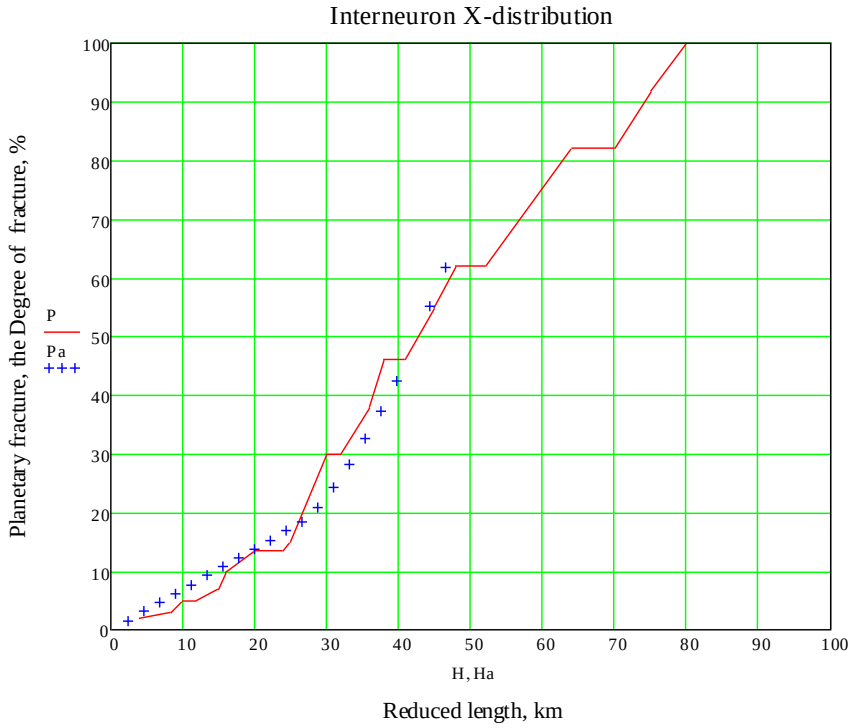

Figure 8. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of the mouse interneuron [5] in brain tissue (as Degree of fracturing, loosening of the brain tissue).

Distribution patterns of the single mouse interneuron (red) on photo [5] (see fig. 7) compared with the curve of degree of branching fractures-loosening Universal Geo-space X-structure (solid curve) to reduced length in km (1 mm = 1 km), defined by photo from the bottom upon table VII are shown on fig. 9.

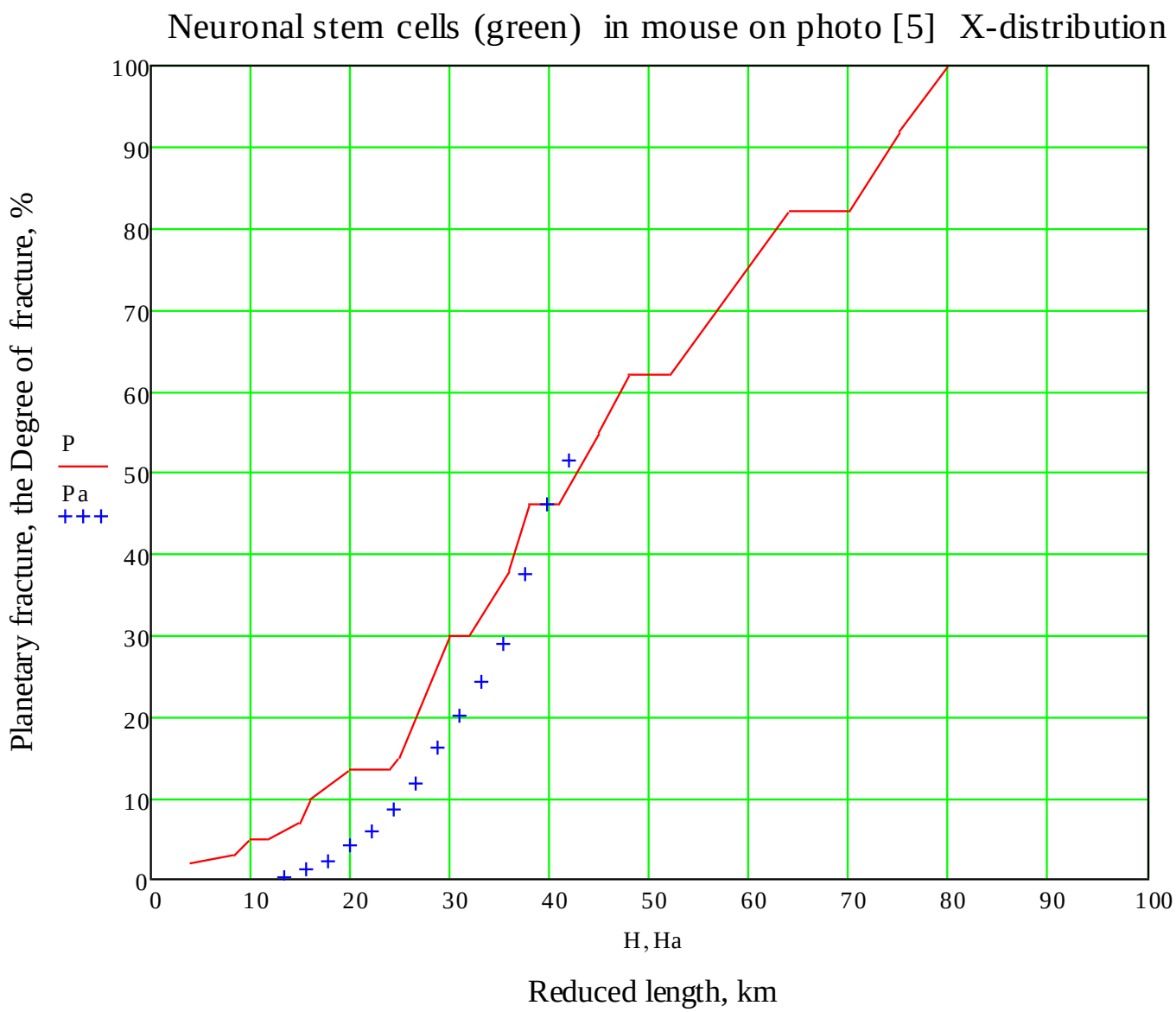

Figure 9. Degree of Planetary fracture of the brain tissue (solid line) and degree of branching germination of mouse stem cells [5] in brain tissue (as Degree of fracturing, loosening of the brain tissue).

CONCLUSION

Observed features-similarities and differences between X-structure of neurons from fig. 10 and the images and fig. 7:

- The picture fig. 7 the neuron body is outside the zone of fracture and sits on a stretch of 1 up to 4 km at reduced length; further fragmented network of dendrites until the soles of the neural nucleus 40-44 km which have density gradient, determined by the largest 50% degree of *branching* germination probability ore of disintegration *of the brain tissue*. The definition adopted for the electrical breakdown: is to achieve 50% probability, as well as in geology.

- On fig. 8, an active mouse interneuron on the bark are available, the entire stretch of their degree of branching distribution almost everywhere is the same as the distribution of degree of branching stem cells No 6-7 human neurons (crosses). On fig. 9 mouse stem cells is below and shorter then X-curve

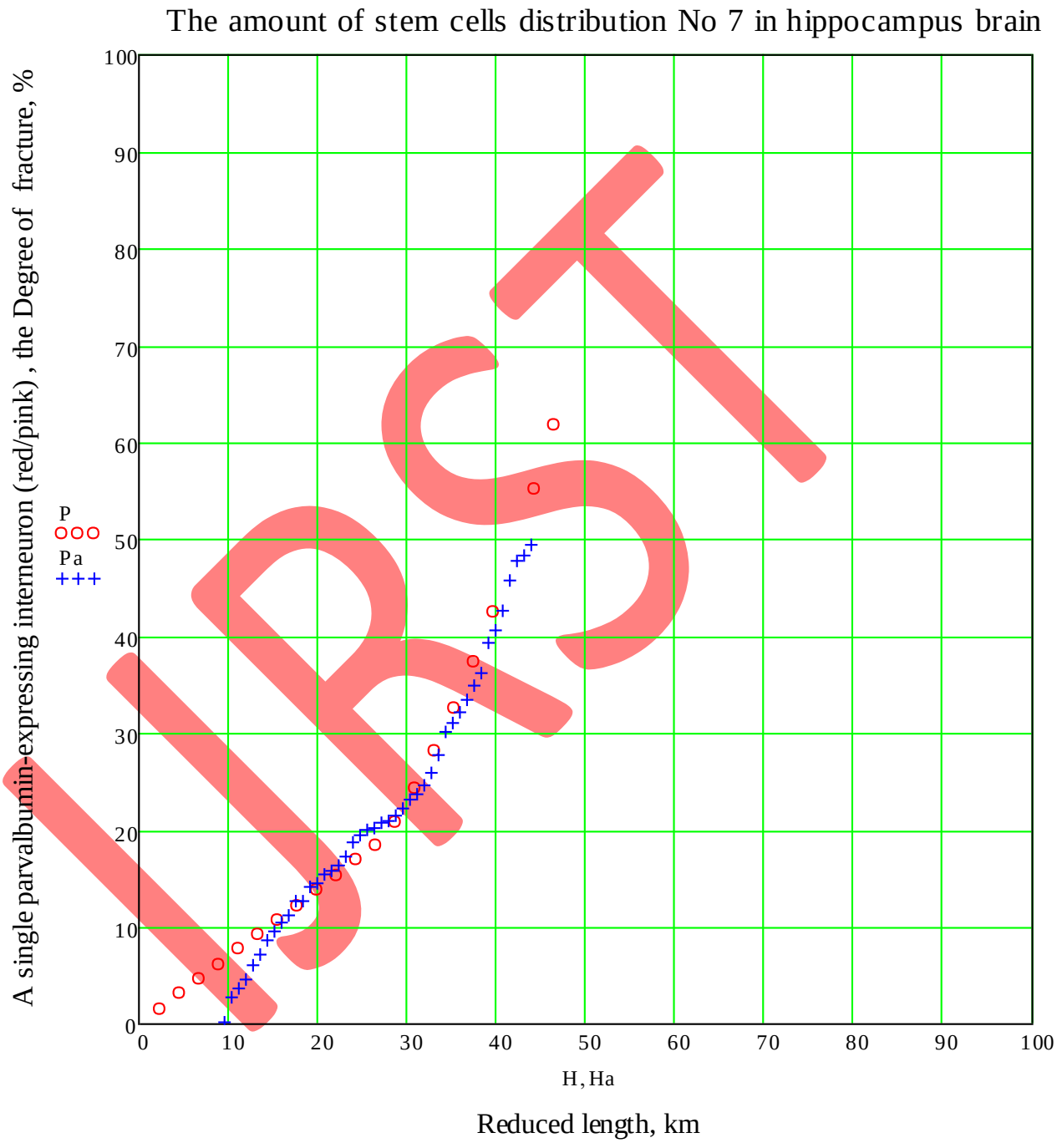

Figure 10. Degree of branching germination of single parvalbumin-expressing mouse interneuron (red/pink) surrounded by many adult neural stem cells (green) in the brain's hippocampus (sircle) and degree of branching germination of stem cells No 7 in brain tissue (as Degree of fracturing, loosening of the brain tissue).

and mouse interneuron, the entire stretch of their degree of branching distribution almost everywhere is the same as the distribution of degree of branching stem cells human neurons (crosses).

- I repeat: an axon bushes No 6-7 very closely matches the theoretical curve, also No 1and no dendrite bushes No. 3 and 5.
- Distribution degree of branching germination of the interneuron (red in fig. 7) turned out to be much more complicated up to 20% from the level of degree of branching of neurons of the mouse (green in fig. 7). This is noticeable on the reduced length of 10-45 km. 20% excess of interneuron branching germination reaches a specified section of the high degree of branching fractures-disintegration (crushing). This area of interneuron activity in fig. 6 the X-structure.
- The zone express interneuron signal [6] ranked by length of up to 9 the widths.
- It follows that the signaling substance allowed interneuron weight is proportional to the density of dendrite network.

FINAL REMARKS

1) *There has been a surprising similarity of distributions of degree of branching germination networks of neural dendrites Bush No. 6-7 in human and mouse interneuron. Only in human's dendrites longer-the degree of nerve regeneration [1] is higher and next bark follow a projected curve up to the very end of the dendrite Bush. The biggest differences on density branching dendrites are observed for mouse stem cell fig. 7 in the zone of active faults.*

2) *P. 2 takes place in the presence of signal substances [7].*

There are still many questions according to fig. 7 and their interpretation in terms of Universal X-structure. However, the fact of the identity of neural distributions to the theory was undeniable.

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