

**Medicine**

**Mathematics**

**Philosophy**

**Together for a  
«better science»**



**ASSOCIAZIONE OPERA ITALIA**

*Associazione per la diffusione  
della cultura italiana*

## **Quantitative & Quantum Gut-BrainResearch Center**

### **Massimo Cocchi**



**Accademico dei Georgofili**



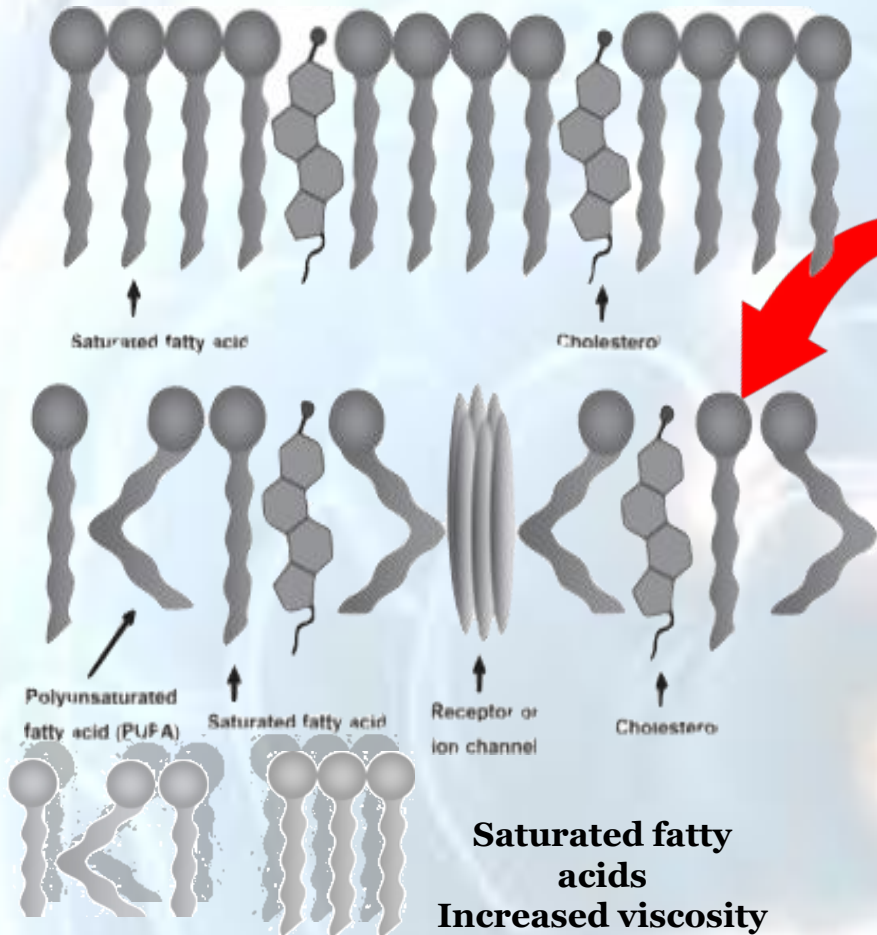
**Presidente della Società Italiana di Biologia Sperimentale  
Sezione di Bologna Oliviero Mario Olivo**



**Istituto "Paolo Sotgiu" per la Ricerca Quantitativa e  
Quantistica in Psichiatria e Cardiologia  
"Paolo Sotgiu" Institute for Research in Quantitative &  
Quantum Psychiatry & Cardiology**

**Department of Veterinary Medical Sciences  
University of Bologna**

**Linoleic in the plasmatic membrane**



**cell membrane**



**Unsaturated fatty acids**  
Decreased viscosity

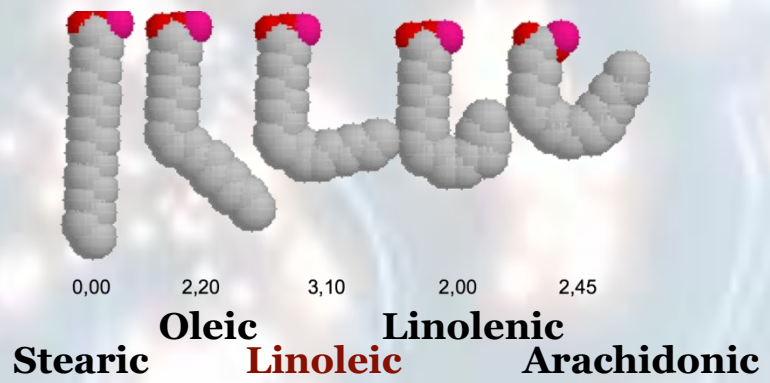
**Medicine**

**Mathematics**

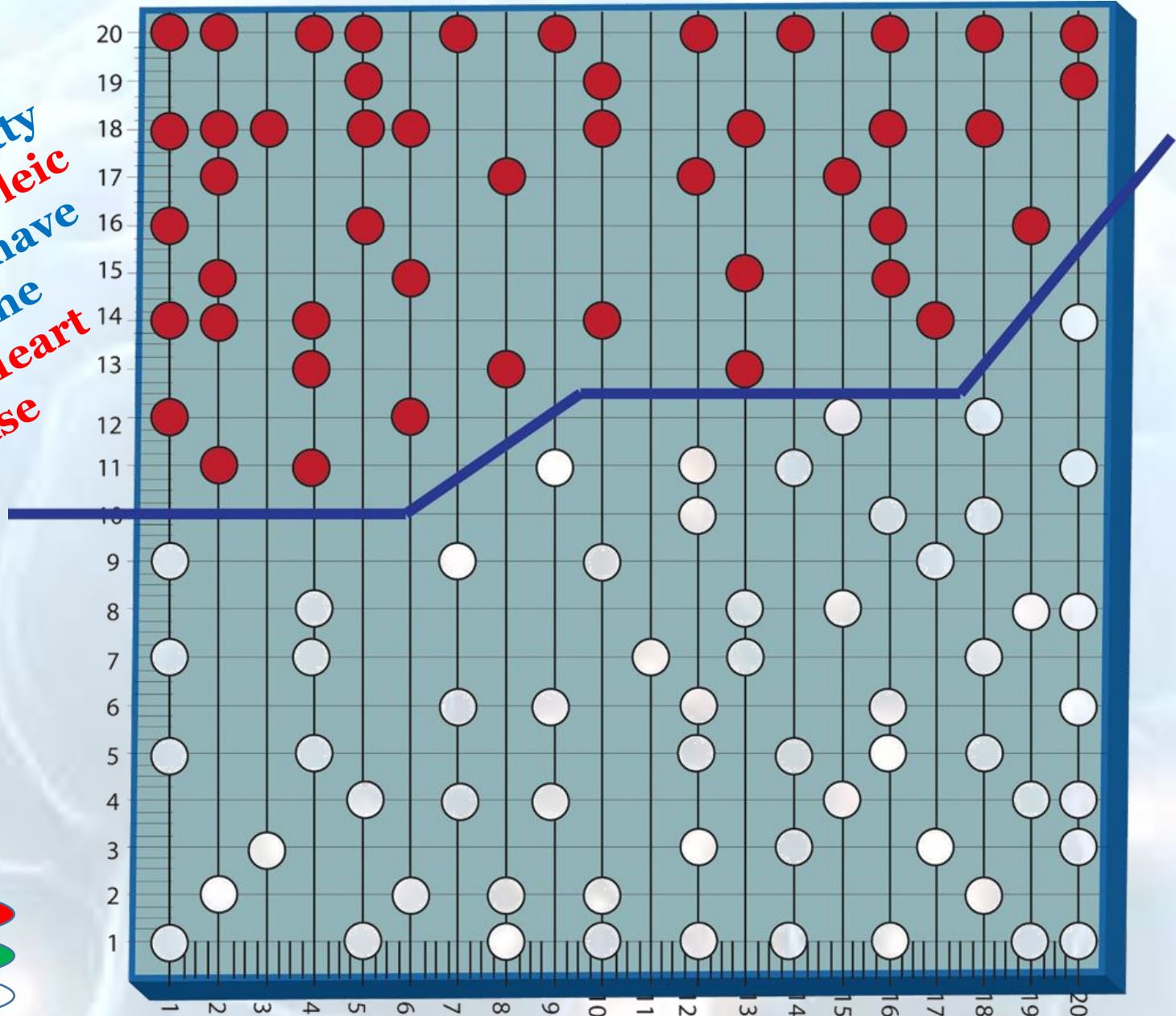
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**Saturated fatty acids**  
Increased viscosity

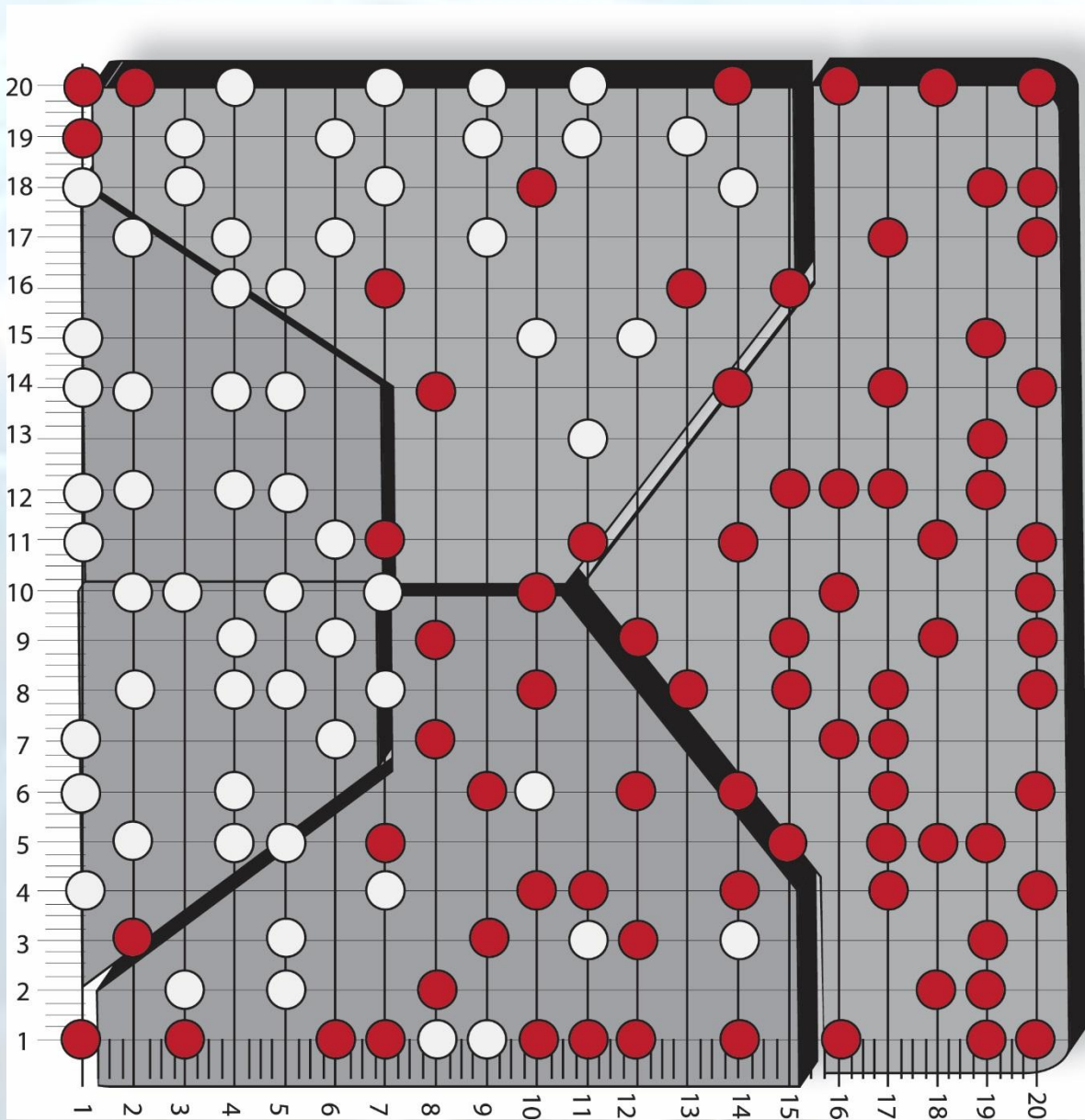


Three Platelets Fatty  
 Acids: **Oleic, Linoleic**  
 & **Arachidonic** have  
 classified the  
 Ischemic Heart  
 Disease



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**Three Platelets Fatty Acids:  
Palmitic, Linoleic &  
Arachidonic have classified  
the  
Mood Disorders**



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- Mathematics
- Philosophy
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# OCD Corner

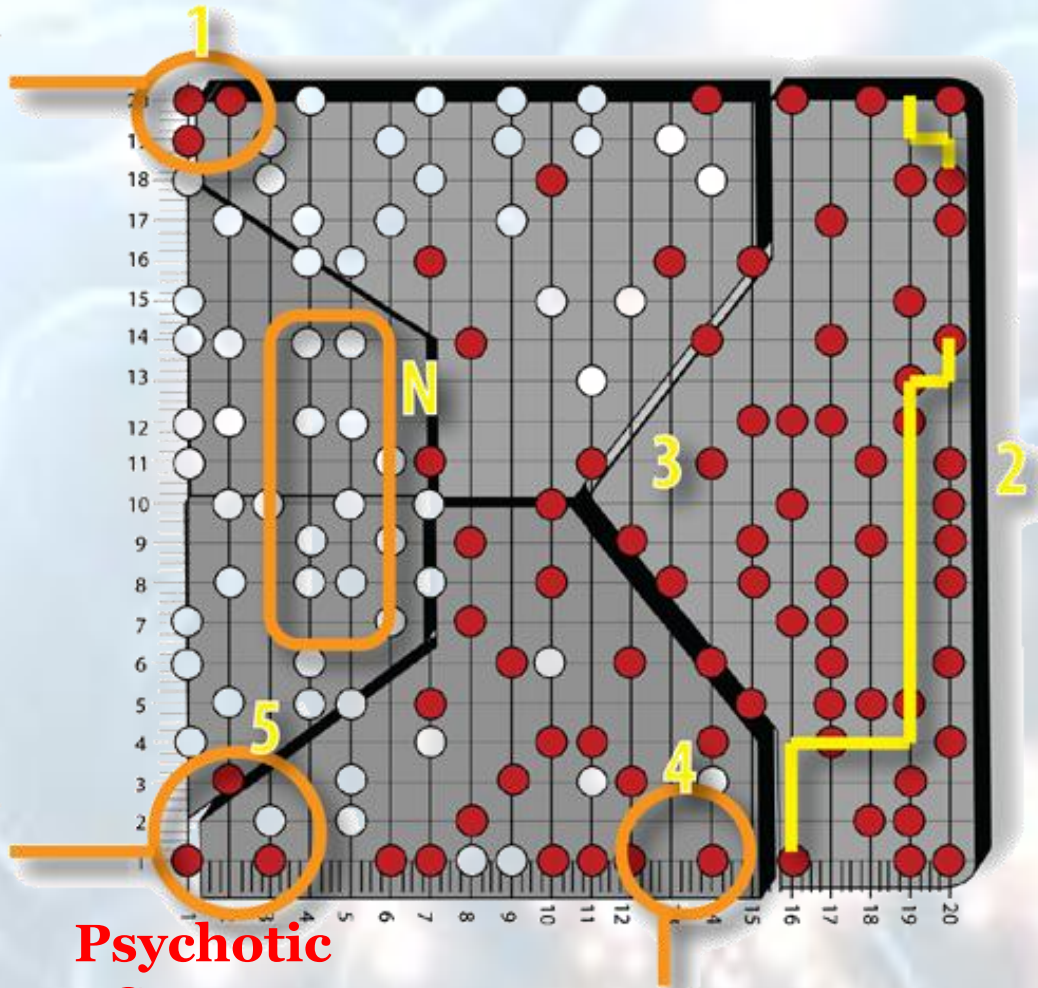
Maximum of  
Linoleic Acid

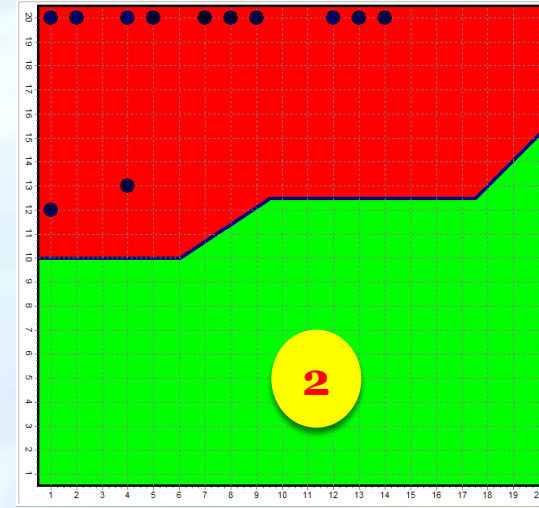
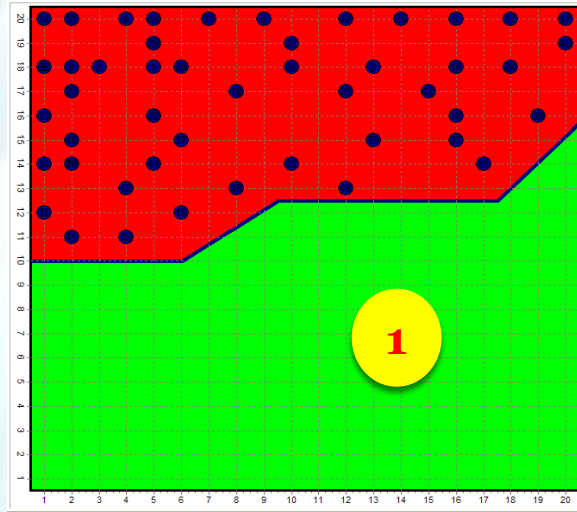
Maximum of  
Palmitic Acid

**Psychotic  
Corner**

Minimum of  
Linoleic Acid  
**Suicide Corner**

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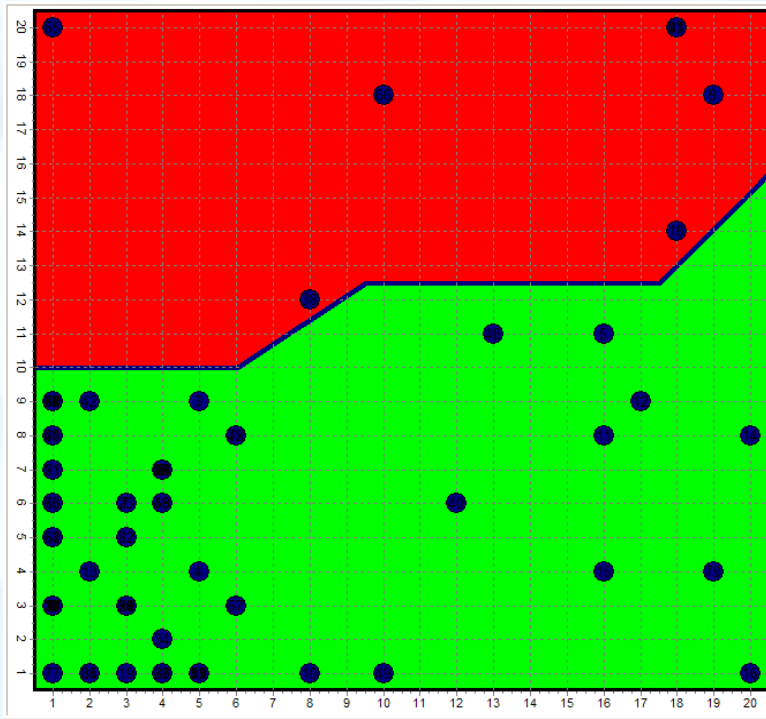
## Ischemic 1 & 2

Medicine

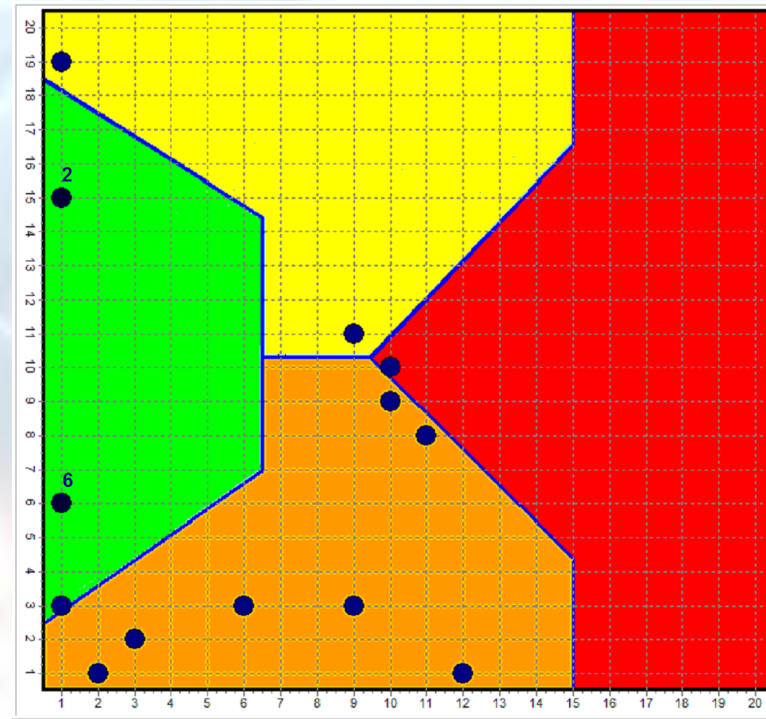
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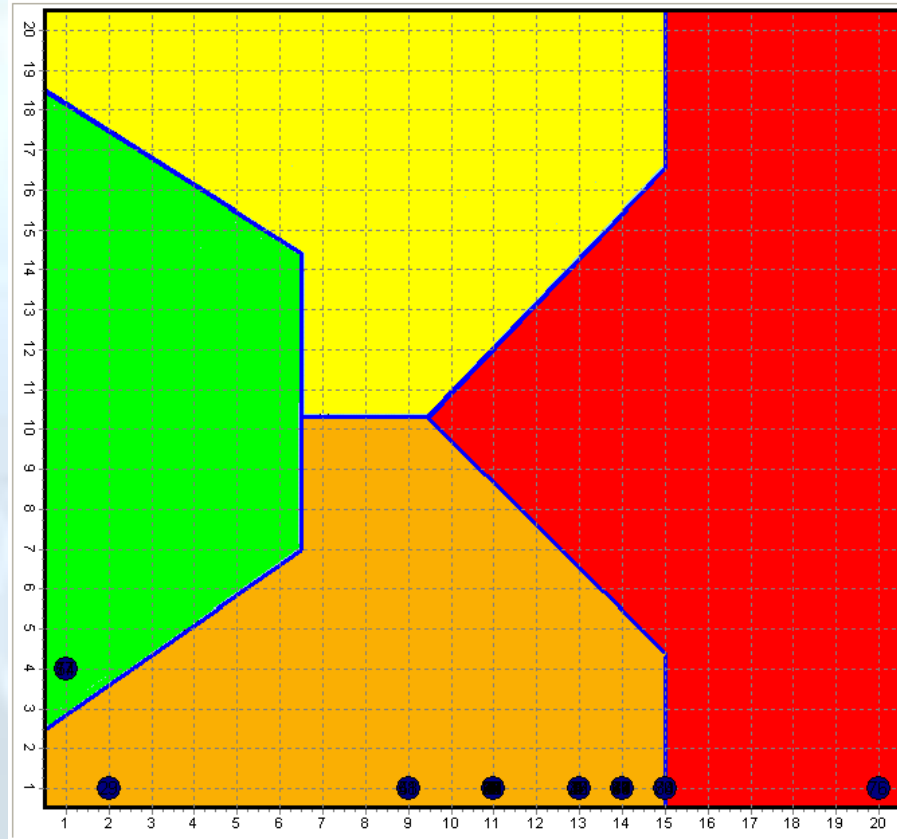


**DEPRESSION IN CAIN**



**ISCHEMIA 1 IN ADAM**

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Medicine

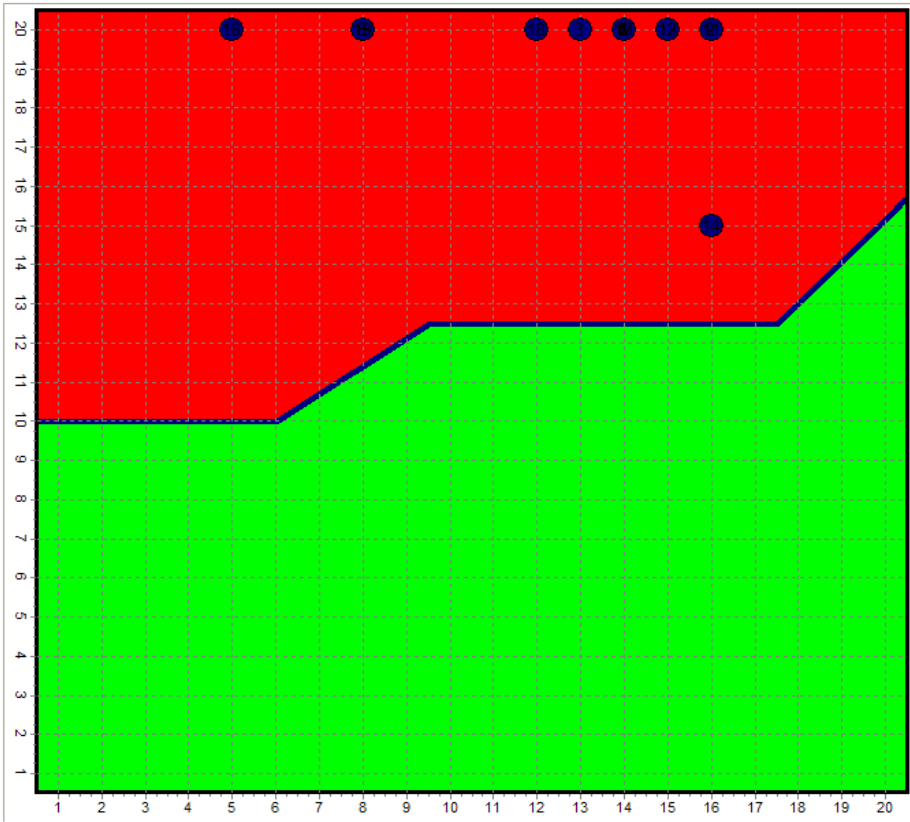
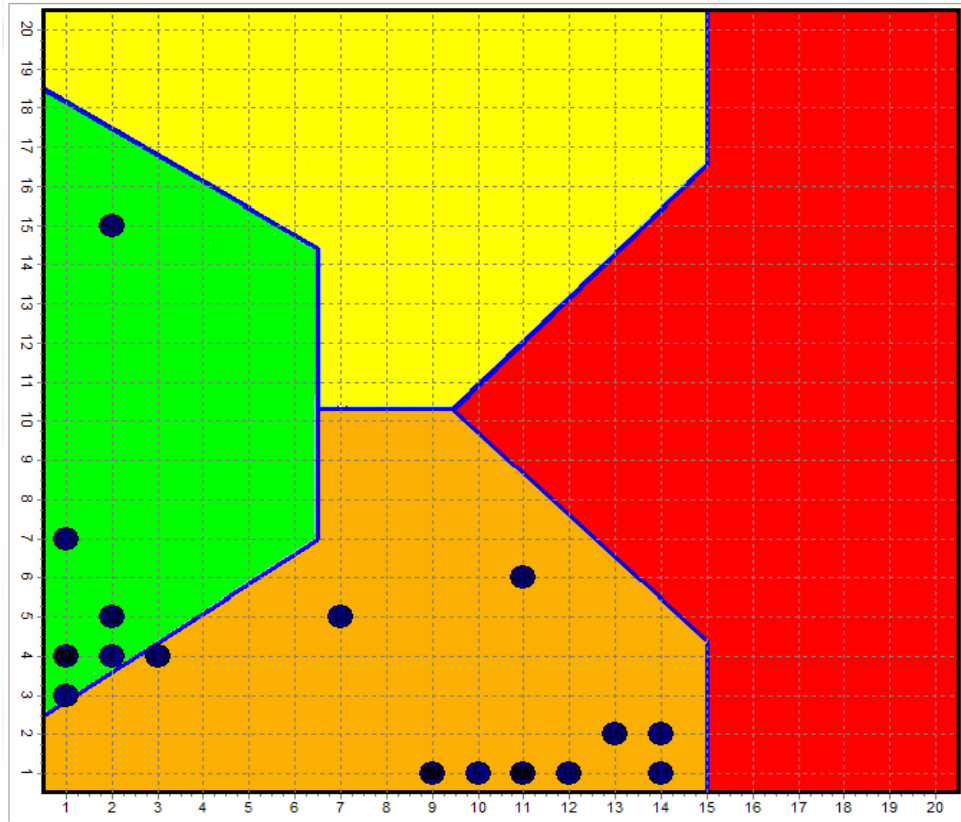
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## ISCHEMIA 2 IN ADAM



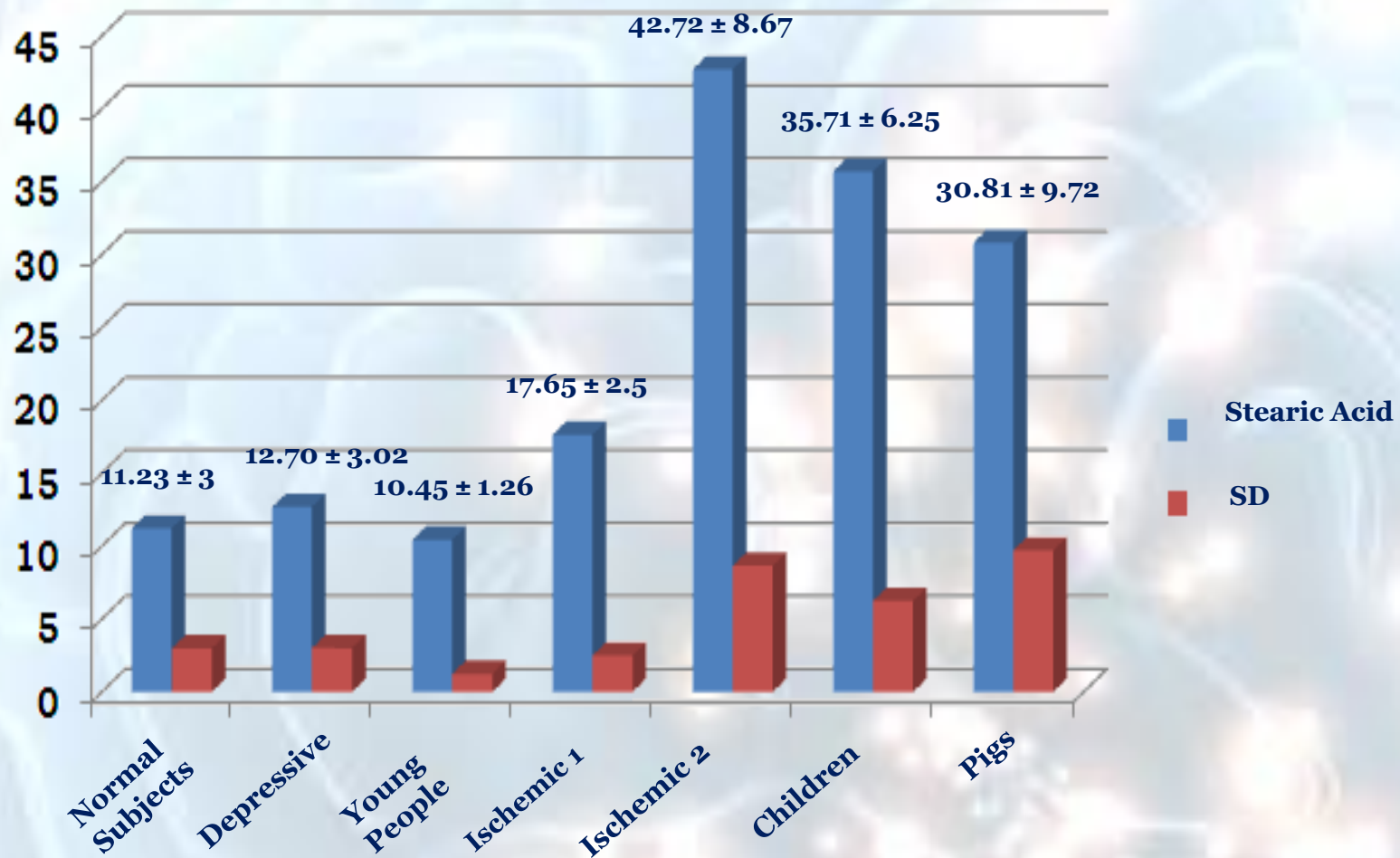


**average age 10,49 ± 2,66**

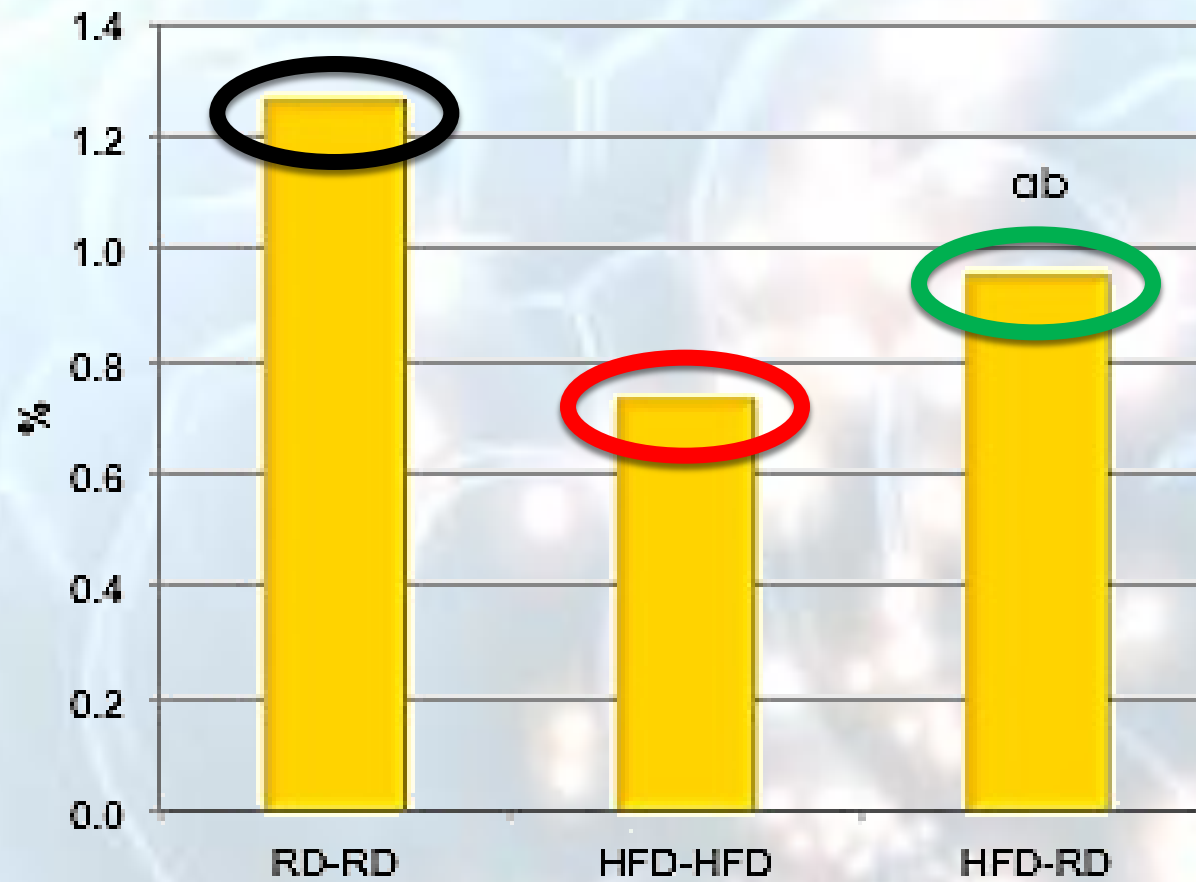
	Nr	%
<b>NO RISK:</b>	<b>26</b>	<b>44.10</b>
<b>LOW RISK:</b>	<b>0</b>	<b>0.00</b>
<b>HIGH RISK:</b>	<b>31</b>	<b>52.50</b>
<b>DEPRESSION:</b>	<b>0</b>	<b>0.00</b>
<b>BORDER LINE:</b>	<b>2</b>	<b>3.39</b>
<b>TOTAL:</b>	<b>59</b>	<b>100.00</b>

	Palmitico	Linoleico	Arachidónico
	<b>23.23</b>	<b>11.82</b>	<b>10.77</b>
	<b>2.90</b>	<b>3.19</b>	<b>4.02</b>





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**RD-RD= ratto normopeso**  
**HFD-HFD= ratto obeso**  
**HFD-RD= ratto obeso messo a dieta**



# **Heart & Linoleic Acid**



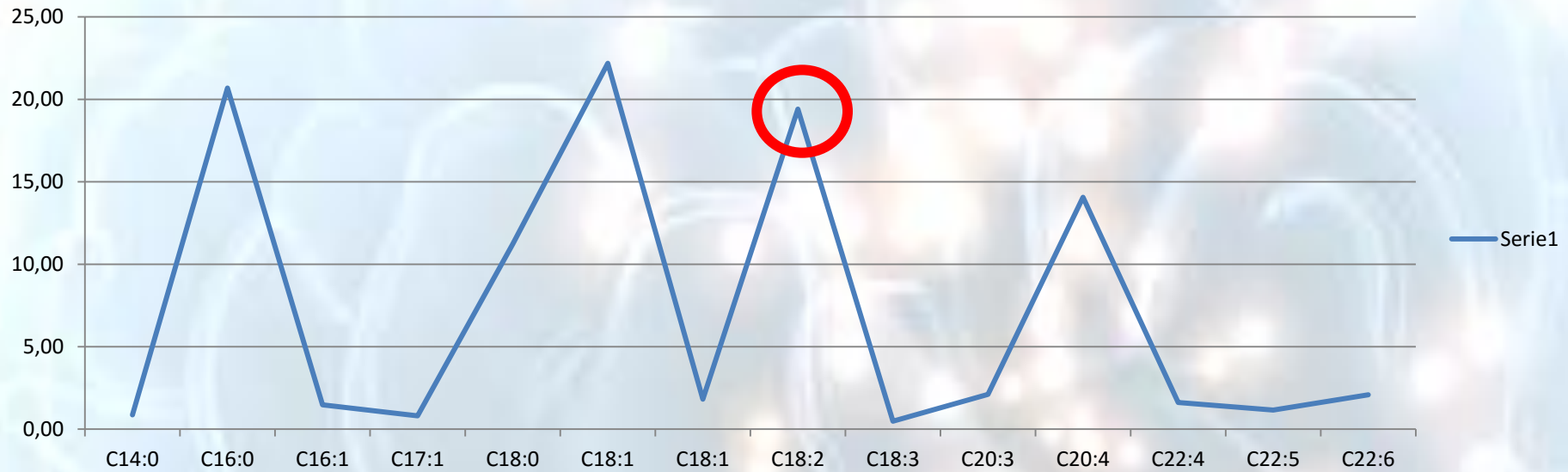
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<b>C14:0</b>	<b>C16:0</b>	<b>C16:1</b>	<b>C17:1</b>	<b>C18:0</b>	<b>C18:1</b>	<b>C18:1</b>	<b>C18:2</b>	<b>C18:3</b>	<b>C20:3</b>	<b>C20:4</b>	<b>C22:4</b>	<b>C22:5</b>	<b>C22:6</b>
0.87	20.68	1.48	0.81	11.23	22.19	1.82	19.41	0.48	2.11	14.06	1.62	1.16	2.09

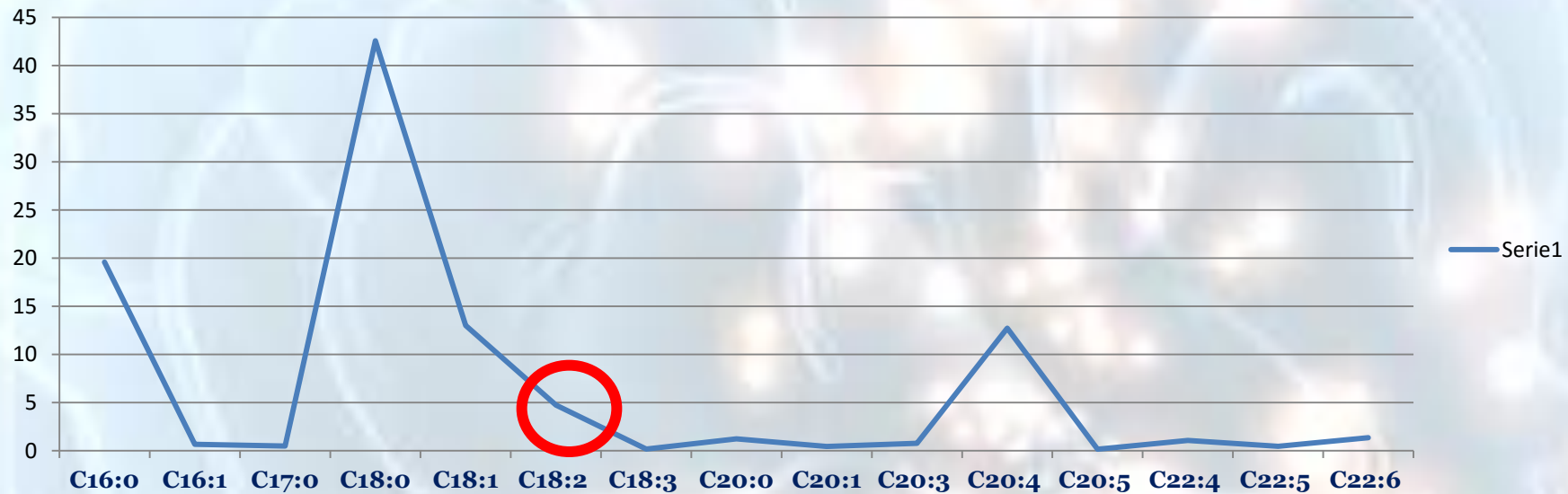


## Platelets Phospholipids fatty acids composition (Normal Humans)



## Ischemic Subjects (n°87): Platelets fatty acids

C16:0	C16:1	C17:0	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:3	C20:4	C20:5	C22:4	C22:5	C22:6
19.59	0.67	0.49	42.57	13.02	4.74	0.18	1.24	0.45	0.77	12.73	0.17	1.07	0.46	1.35
2.50	0.37	0.57	7.58	3.16	1.72	0.06	0.26	0.19	0.30	4.46	0.15	0.47	0.21	1.26



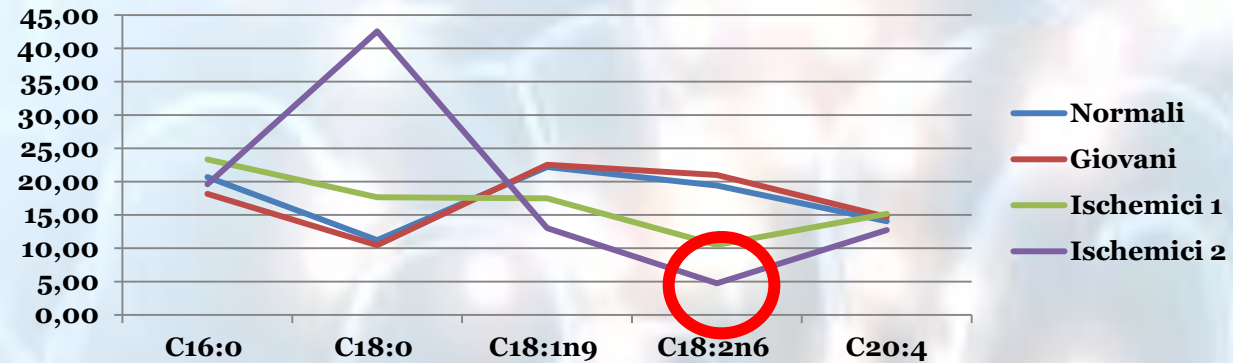
Medicine

Mathematics

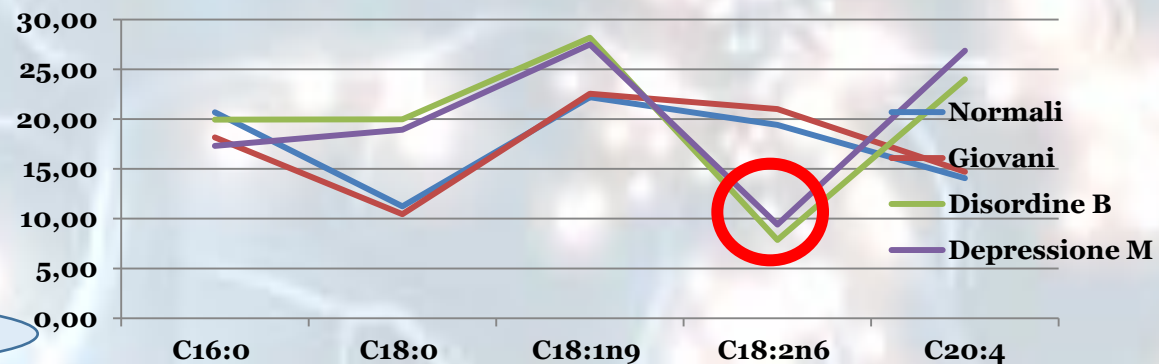
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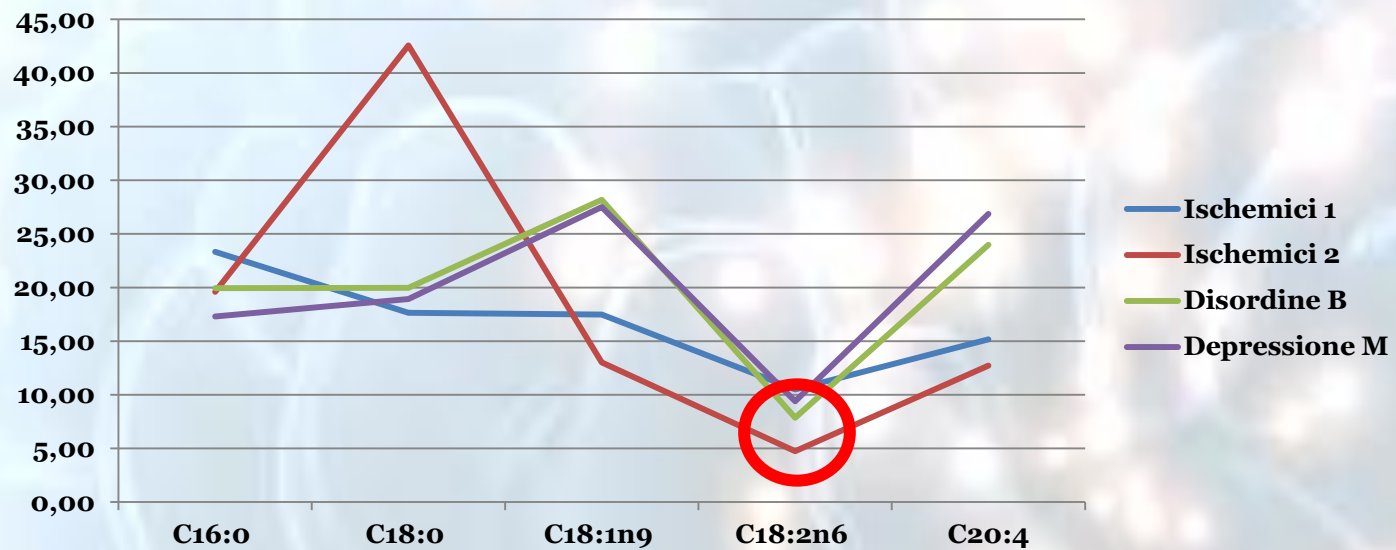
	C16:0	C18:0	C18:1n9	C18:2n6	C20:4
<b>Normals</b>	20.68	11.23	22.19	19.41	14.06
<b>Young people</b>	18.16	10.45	22.54	21	14.71
<b>Ischemic 1</b>	23.32	17.65	17.48	10.51	15.17
<b>Ischemic 2</b>	19.59	42.57	13.02	4.74	12.73
<b>Bipolar</b>	19.94	19.97	28.17	7.86	23.99
<b>M. Depression</b>	17.30	18.93	27.50	9.40	26.87



	C16:0	C18:0	C18:1n9	C18:2n6	C20:4
<b>Normals</b>	20.68	11.23	22.19	19.41	14.06
<b>Young people</b>	18.16	10.45	22.54	21	14.71
<b>Bipolar</b>	19.94	19.97	28.17	7.86	23.99
<b>M. Depression</b>	17.30	18.93	27.50	9.40	26.87



	C16:0	C18:0	C18:1n9	C18:2n6	C20:4
<b>Ischemic 1</b>	23.32	17.65	17.48	10.51	15.17
<b>Ischemic 2</b>	19.59	42.57	13.02	4.74	12.73
<b>Bipolar</b>	19.94	19.97	28.17	7.86	23.99
<b>M. Depression</b>	17.30	18.93	27.50	9.40	26.87





All animals living in normal environment have, more or less, the same quantity of Linoleic Acid in the brain and this means that the brain needs a very small amount of it to maintain the stability



**Chicken**

**0,8**



**Pig**

**0,3**



**Moorhen**

**0,5**



**Penguin**

**0,4**



**Human**

**0,3**



**Pyton**

**2,2**



**Goose**

**0,9**



**Mallard**

**0,5**

except.....

**Sea Turtle**



**12.1**

selective incorporation...?

**Desert Iguana**



**22.4**

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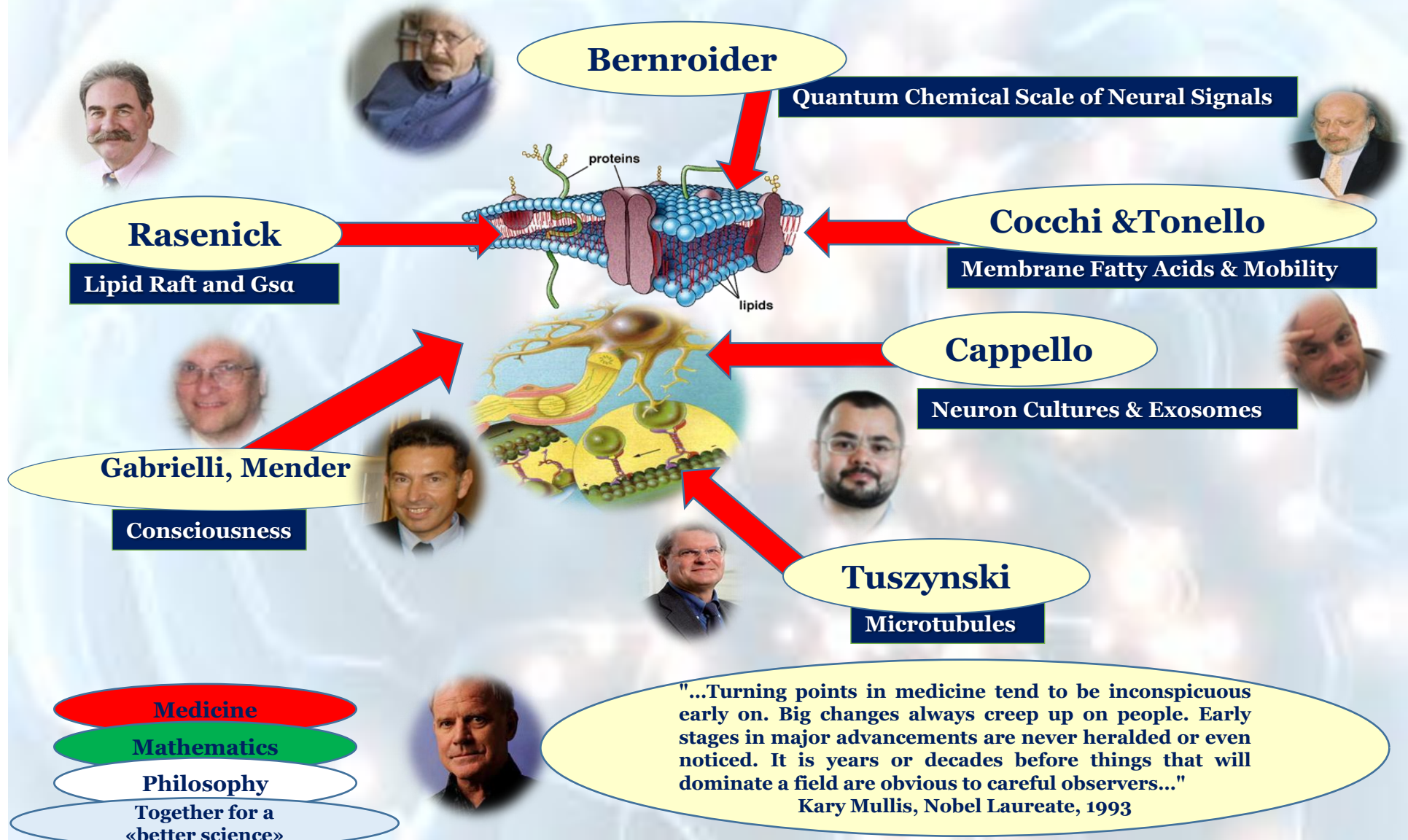
Albuquerque N, Guo K, Wilkinson A, Savalli C, Otta E,  
 Mills D. 2016 Dogs recognize dog and human  
 emotions. Biol. Lett. 12: 20150883.



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# Quantum Neuron Molecular Mapping Q-NeMoMa Project

**The  
Future**



The increasing trend to enrich foods with polyunsaturated acyl groups entails the potential risk of enriching the food with some O $\alpha$  $\beta$ UAs (oxygenated  $\alpha,\beta$ -unsaturated aldehydes at the same time, as has already been detected in some studies carried out in 2007. PUFA-fortified foods available on the market have been increasing since epidemiological and clinical researches have revealed possible effects of PUFA on brain development and curative and/or preventive effects on cardiovascular disease. However, PUFA are very labile and easily oxidizable, thus the maximum beneficial effects of PUFA supplements may not be obtained if they contain significant amounts of toxic O $\alpha$  $\beta$ UAs, which as commented on above, are being considered as possible causal agents of numerous diseases.

EPA and DHA are highly susceptible to lipid oxidation. Lipid oxidation of fish oil and other PUFA-rich foods is a serious problem that often leads to loss of shelf-life, consumer acceptability, functionality, nutritional value, and safety.

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*Surh, J.; Lee, S.; Kwon, H. (2007). "4-Hydroxy-2-alkenals in polyunsaturated fatty acids-fortified infant formulas and other commercial food products". Food Additives & Contaminants 24 (11): 1209.*

*E. Arab-Tehrany et al. / Trends in Food Science & Technology 25 (2012) 24e33*