

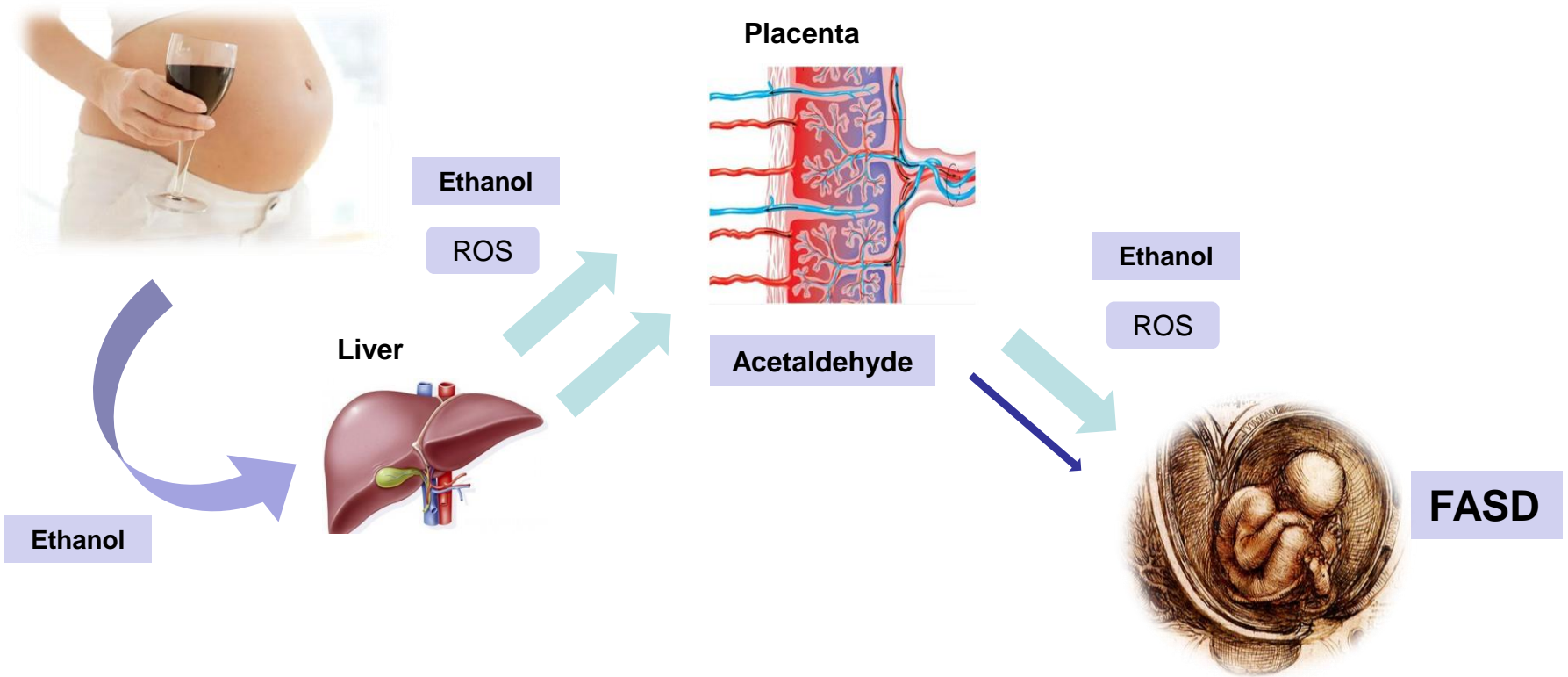
ETHANOL-INDUCED CHANGES ACCORDING TO TWO PATTERNS OF EXPOSURE (BINGE VS CHRONIC) IN PLACENTAL AND NEURAL MARKERS AFTER PRENATAL ALCOHOL EXPOSURE IN C57BL/6J MICE. BENEFICIAL EFFECT OF EPIGALLOCATECHIN GALLATE (EGCG) ADMINISTRATION

Laura Almeida Toledano
Vicente Andreu

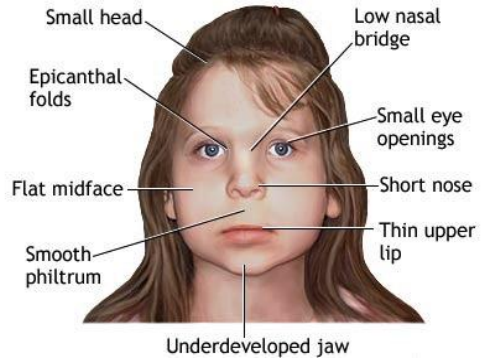
BCNatal – Centre de Medicina Maternofetal i Neonatologia de Barcelona
Hospital Sant Joan de Déu & Hospital Clínic
Universitat de Barcelona

11 Junio 2019

Alcohol in pregnancy



Fetal Alcohol Syndrome

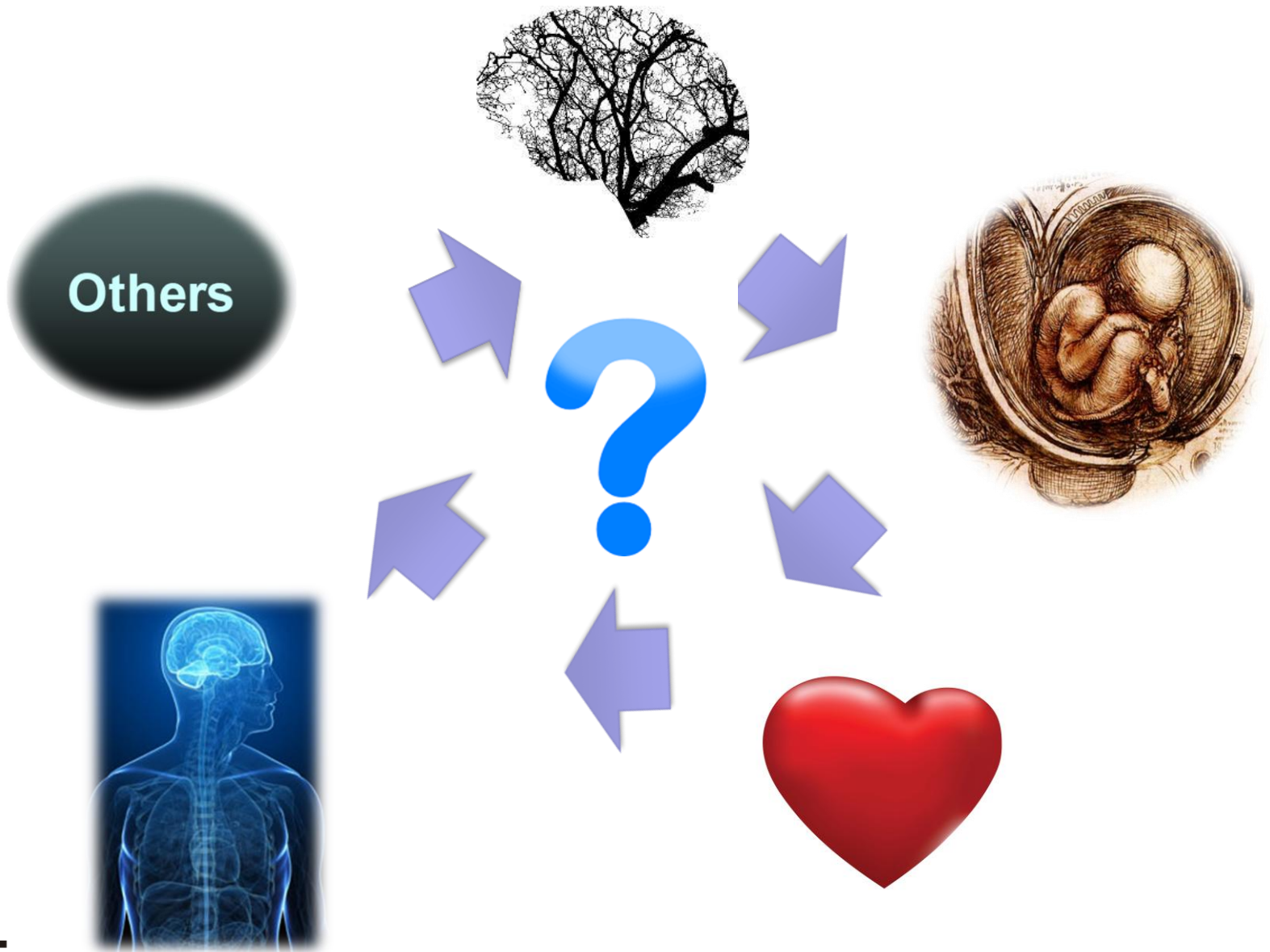


Via de tren

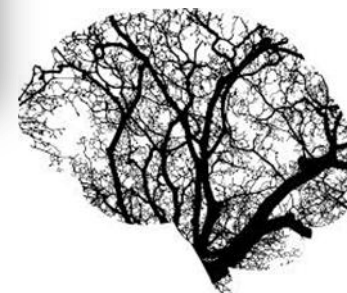
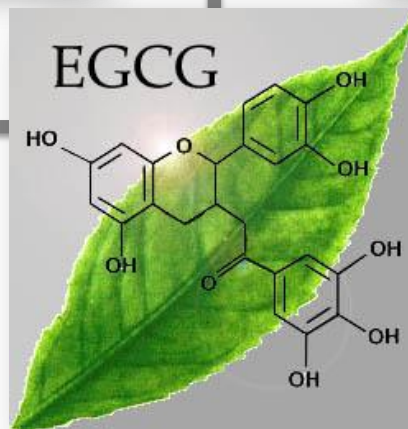


Manos con Stick hockey

Fetal Alcohol Spectrum Disorders



Aim

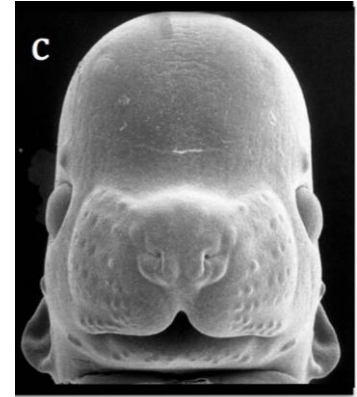


Study design

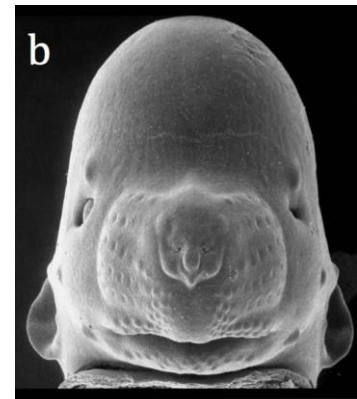
C57BL6



Control

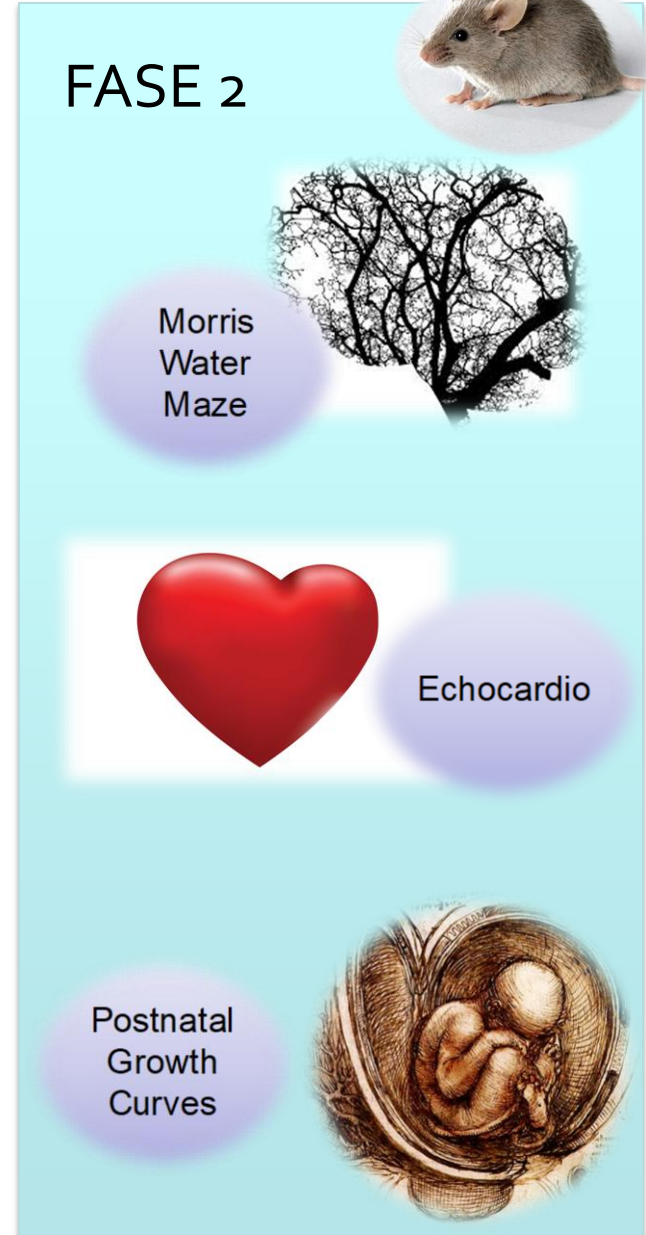
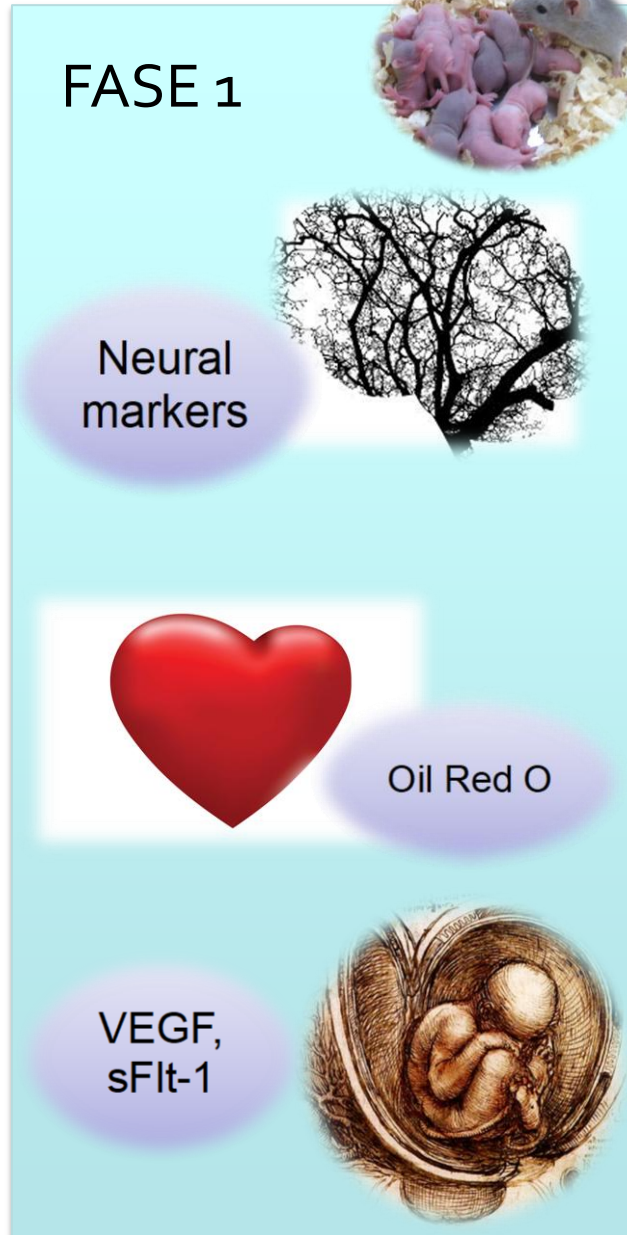


FAS






B
I
R
T
H




Study design


FASE 1




Neural markers




Oil Red O




VEGF, sFlt-1




FASE 2




Morris Water Maze



Echocardio



Postnatal Growth Curves



Phase 1 results: Alcohol & EGCG

1- Concentración alcohol en sangre materna

Fase 1 medición etanol		Dosis 3g/Kg BINGE y 0,75g/kg MED			
Condition	Serum Sample	dil 1/100 (nmol)	nmol/uL	ng/uL	g/L
Control	9E17 suero rat8	0,26	0,51	23,66	0,02
OH Med	20E33	1,27	2,54	116,98	0,12
OH Bin	17E30	12,94	25,89	1192,53	1,19
OH Bin	21E34	11,72	23,44	1079,96	1,08
OH Bin	22E35	11,38	22,77	1048,81	1,05
OH Med +AO	9E18 suero rat 23	1,67	3,34	153,86	0,15
OH Med +AO	11E20	2,44	4,88	224,84	0,22
OH Med +AO	13E24	3,99	7,98	367,53	0,37
OH Med +AO	19E32	5,78	11,55	532,27	0,53
OH Bin + AO	10E19	13,93	27,87	1283,79	1,28
OH Bin + AO	11E20	3,93	7,85	361,80	0,36
OH Bin + AO	11E21	13,44	26,88	1238,23	1,24
OH Bin + AO	13E23	19,94	39,88	1837,22	1,84
OH Bin + AO	17E29	16,43	32,85	1513,48	1,51
OH Bin + AO	23E36	16,81	33,62	1548,89	1,55

2- Concentración EGCG en sangre

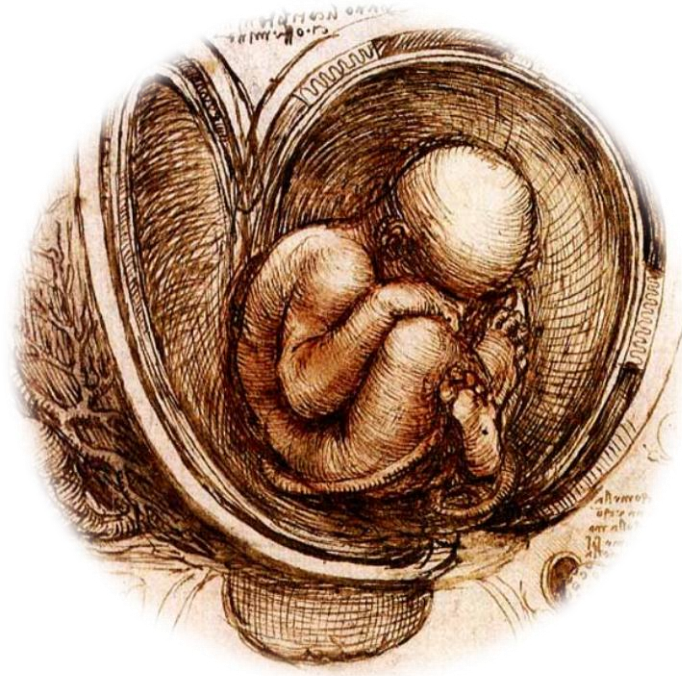
Muestra	Tiempo desde inicio tratamiento	EGCG (ng/ml)
4T4-S	30 min	32,1
4T5-S	35 min	11,5
4T6-S	40 min	23,4
6T12-S	35 min	38,9



Phase 1 results: Growth

Aquí me falta insertar
resultados de pesos
fetos/placentas

Western Blot Phase 1 results

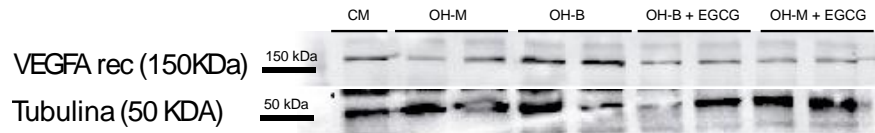




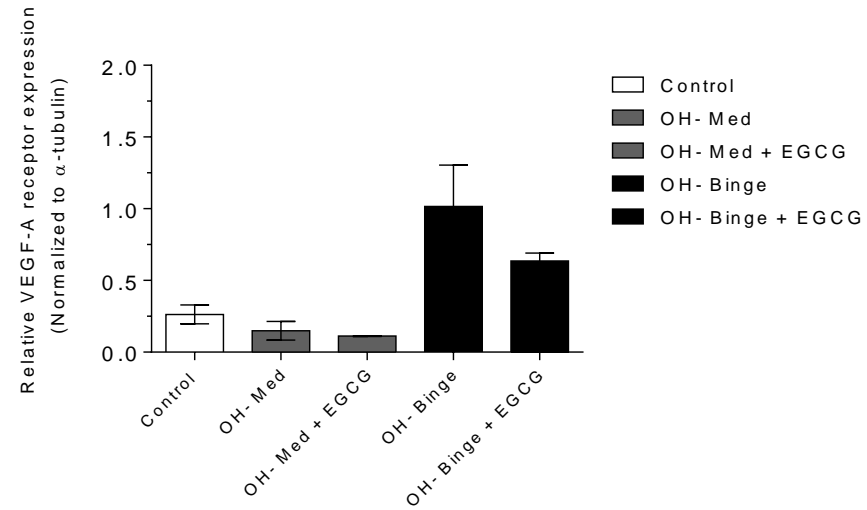
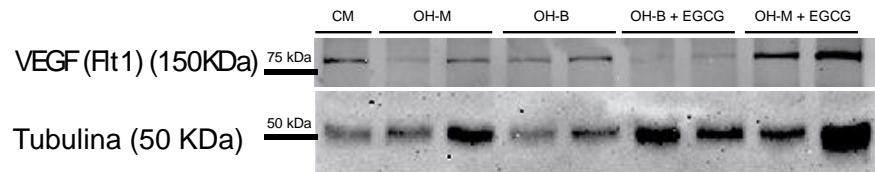
Western Blot Phase 1 results

WB17

Placenta WB1



Placenta WB2





Western Blot Phase 1 results

WB1

Placenta WB1

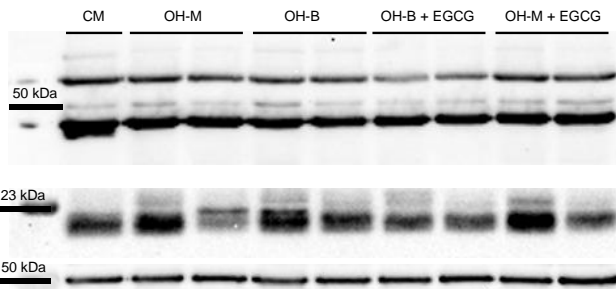
VEGF 189 (120KDa)

VEGF 165 (60KDa)

VEGF 121 (45KDa)

VEGFA (23KDa)

Tubulina (50 KDa)



WB2

Placenta WB2

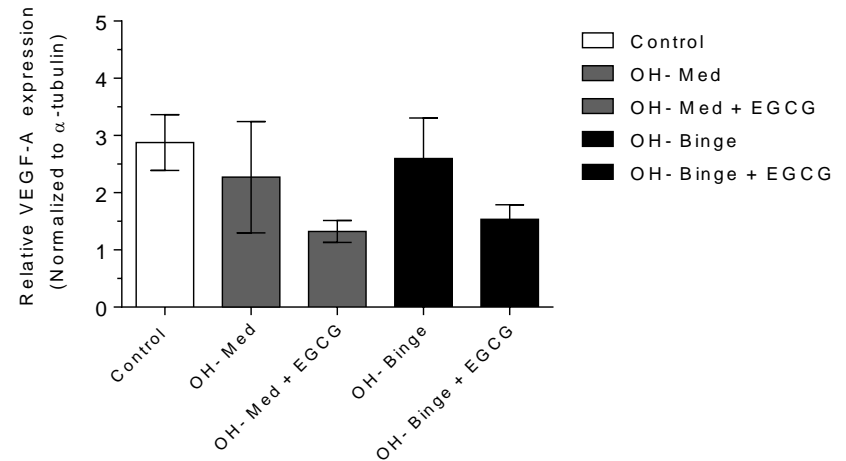
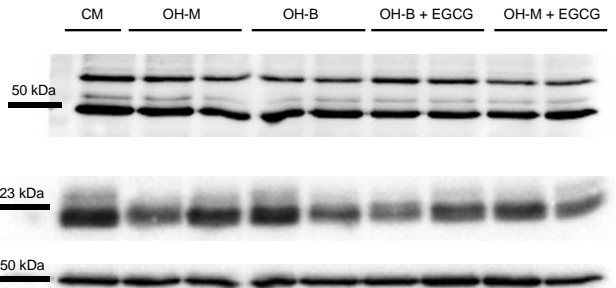
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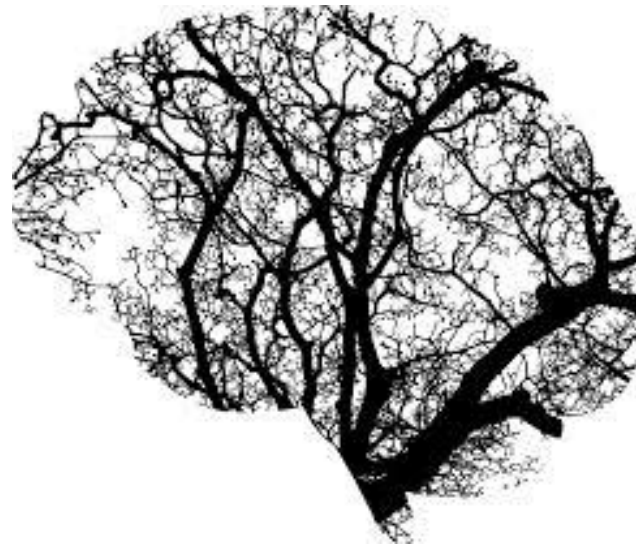
VEGF 121 (45KDa)

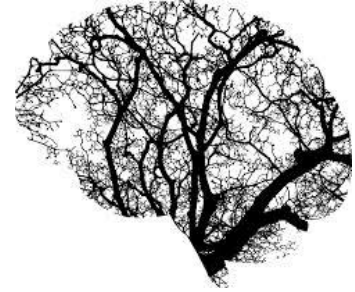
VEGFA (23KDa)

Tubulina (50 KDa)



Western Blot Phase 1 results



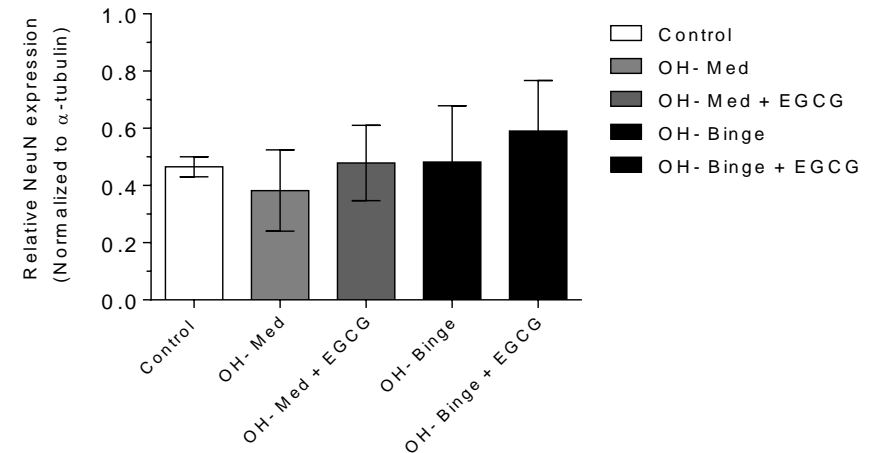
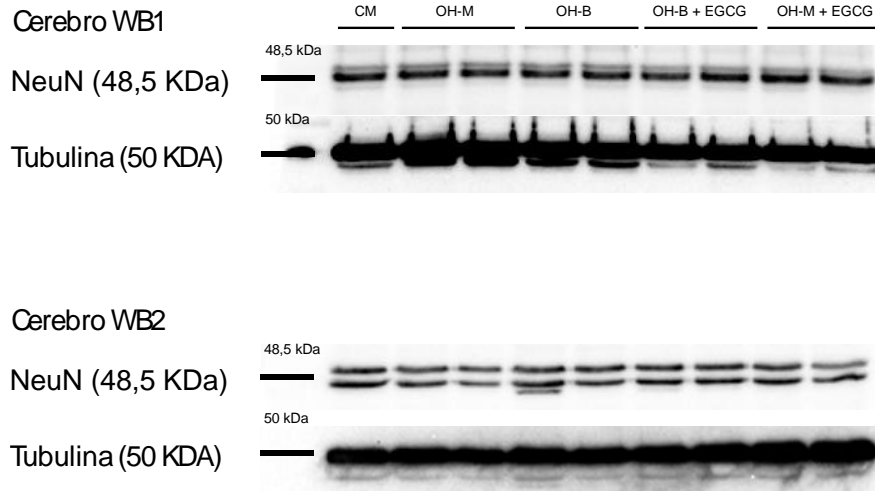


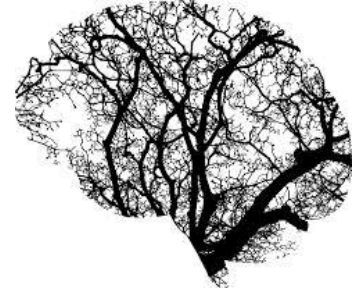
Western Blot Phase 1 results

Neurogenesis and neuronal markers:

NeuN: Biomarker of mature neurons.

Doblecortina: Biomarker of immature neurons.





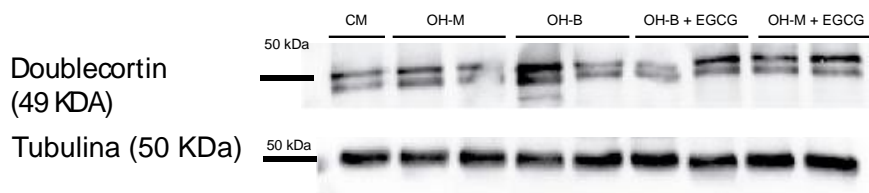
Western Blot Phase 1 results

Neurogenesis and neuronal markers:

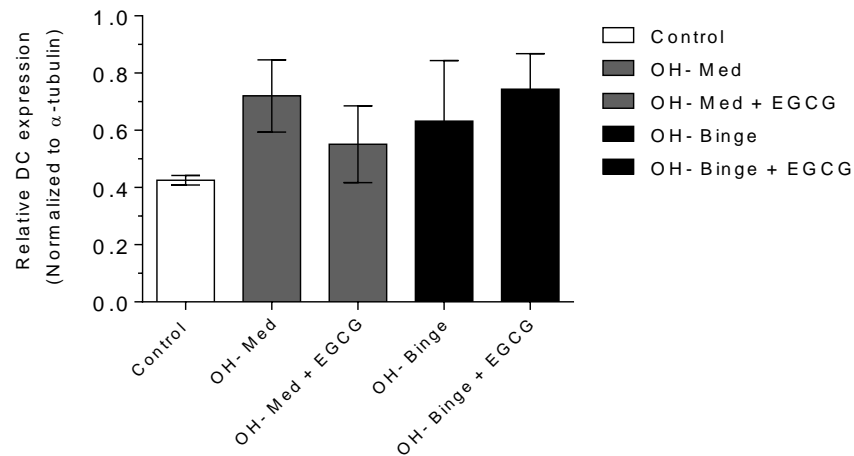
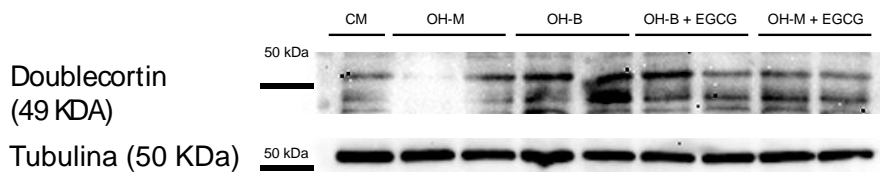
NeuN: Biomarker of mature neurons.

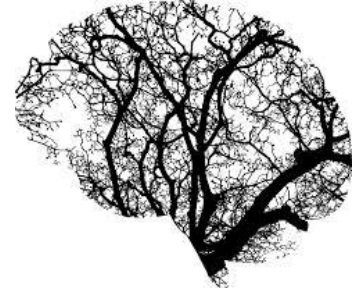
Doblecortina: Biomarker of immature neurons.

Cerebro WB1



Cerebro WB2





Western Blot Phase 1 results

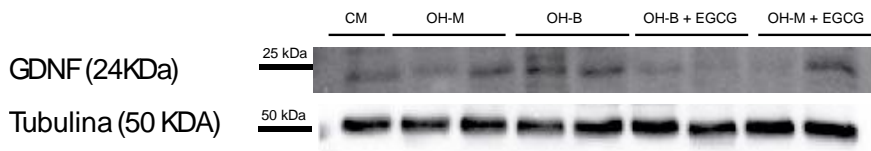
Neuronal maturation and differentiation:

GFAP: (Glial fibrillary acidic protein) Biomarker of astrocytes maturation.

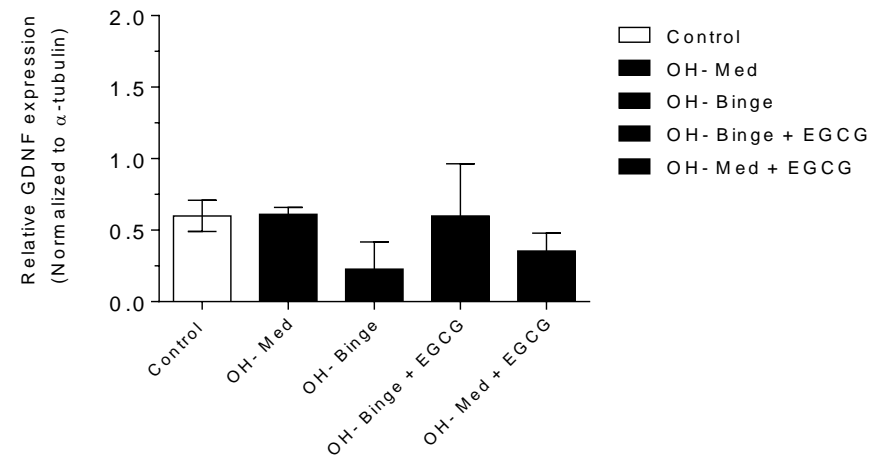
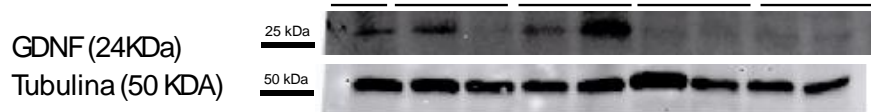
GDNF: (Glial cell-derived neurotropic factor) Survival and differentiation of dopaminergic neurons.

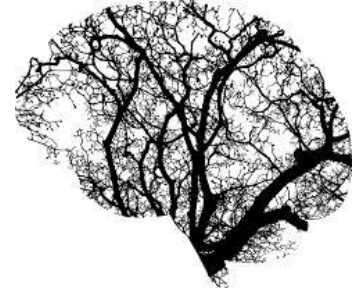
Sox2: Biomarker of Cellular differentiation during embryonic development.

Cerebro WB1



Cerebro WB2





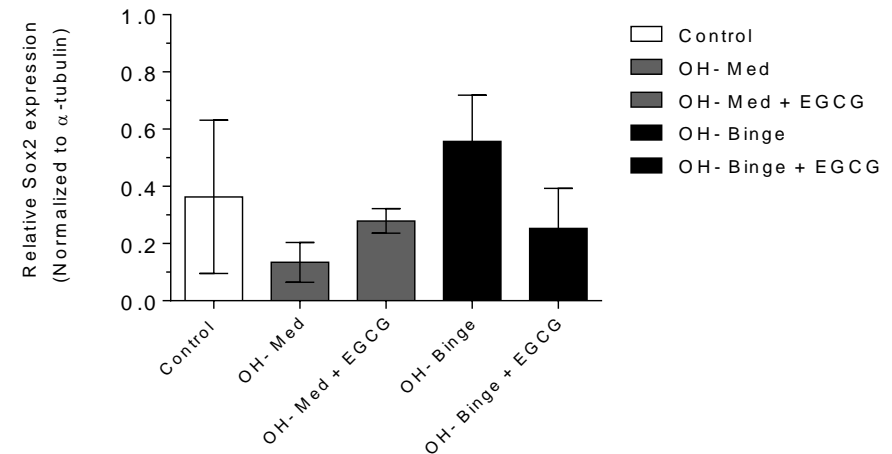
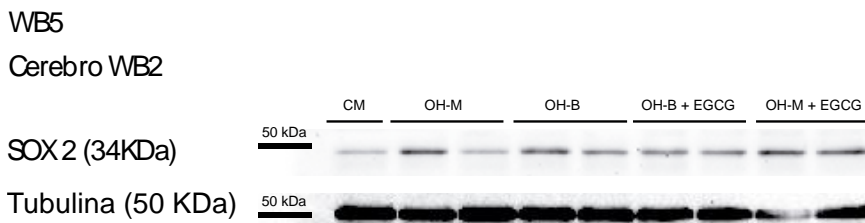
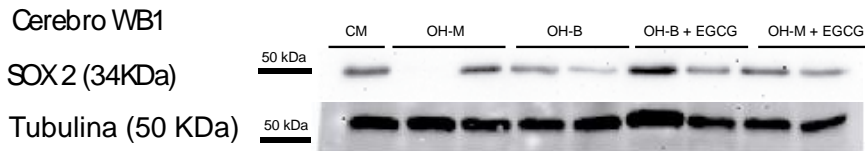
Western Blot Phase 1 results

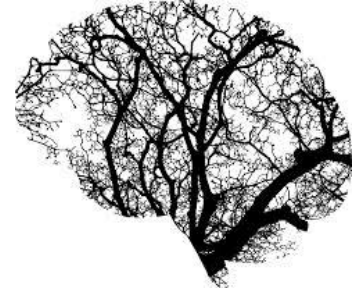
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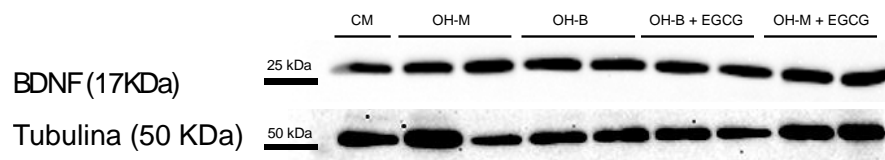
Western Blot Phase 1 results

Neuronal plasticity:

BDNF: (brain-derived neurotropic factor) Viability and neuronal plasticity biomarker.

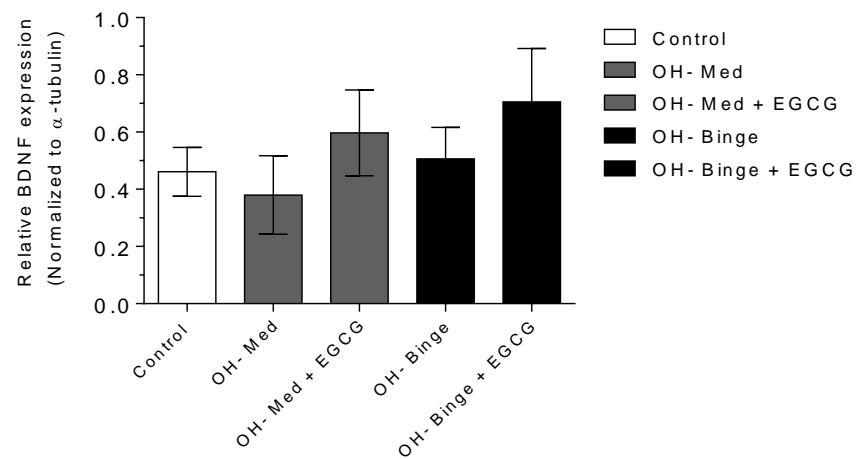
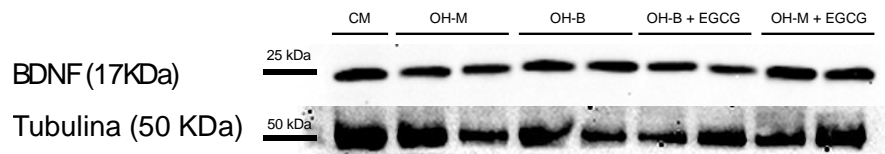
WB9

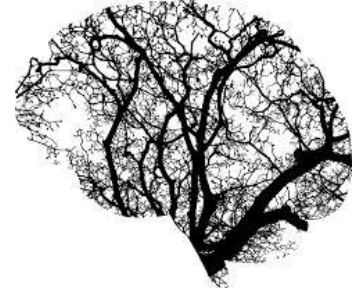
Cerebro WB1



WB9

Cerebro WB2



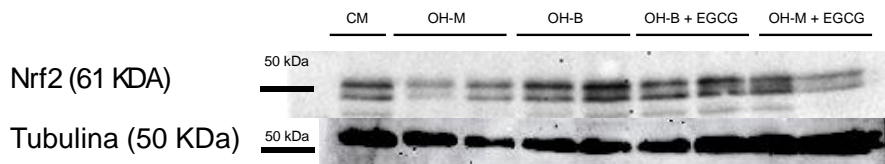


Western Blot Phase 1 results

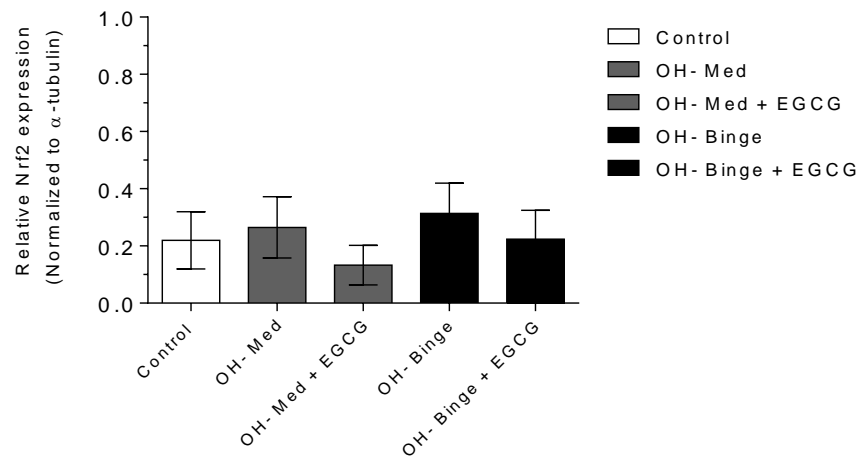
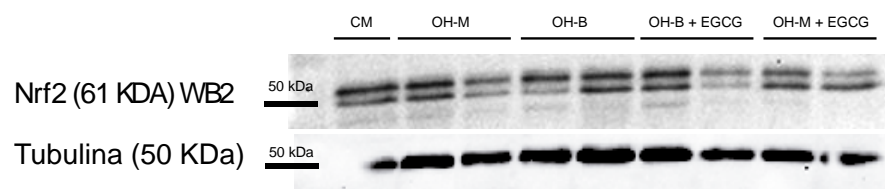
Oxidative stress:

Nrf2: Transcription factor which activates the antioxidant response pathways

Cerebro WB1

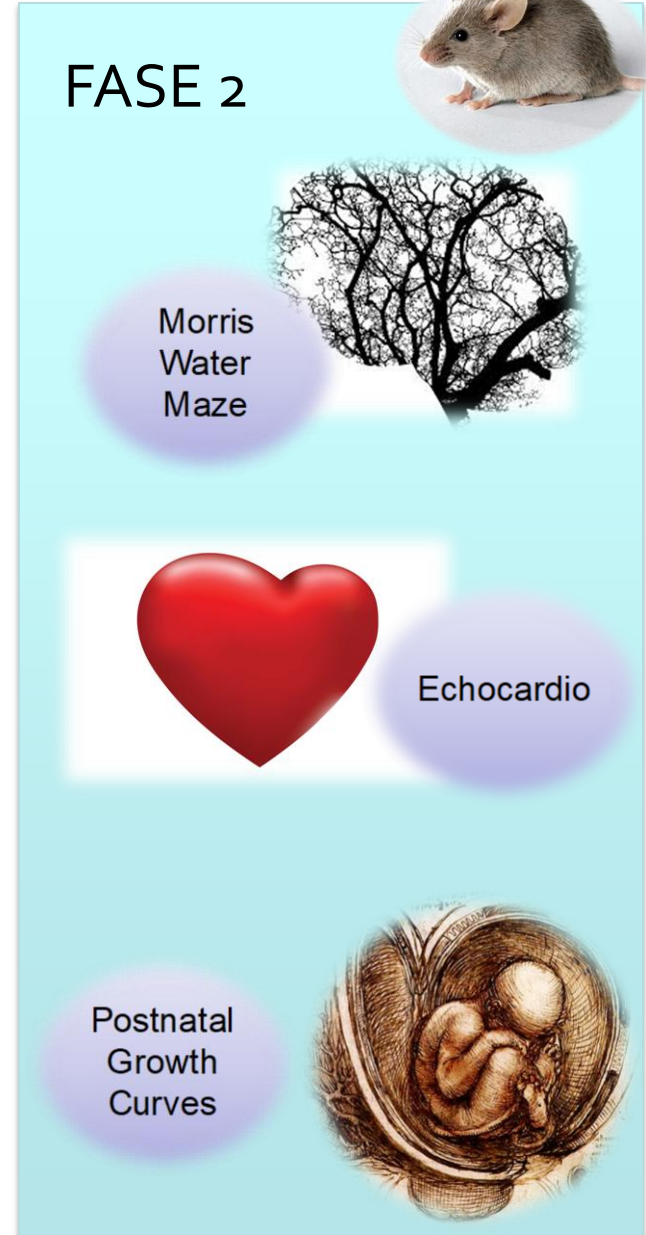
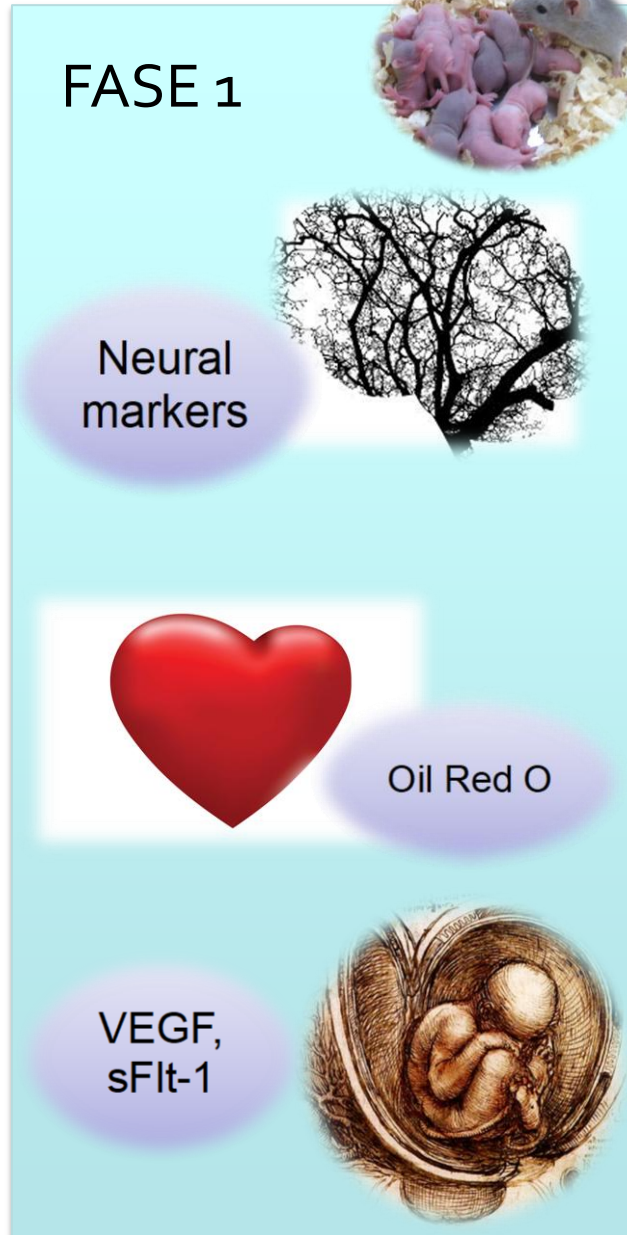


Cerebro WB2



- Prenatal ethanol exposure (PEE) produces an alteration in feto-maternal barrier permeability, it can be the leading cause of intrauterine growth restriction (IUGR)
- Oxidative stress produced by ethanol influences neurogenesis and plasticity processes during brain development
- EGCG treatment is showing promising results in reducing PEE effects
- Studies with larger sample size are needed in order to find statistically significant results







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Óscar García Algar
Leopoldo Martínez

