



PAPERS ETC.

2nd batch of embryologic papers

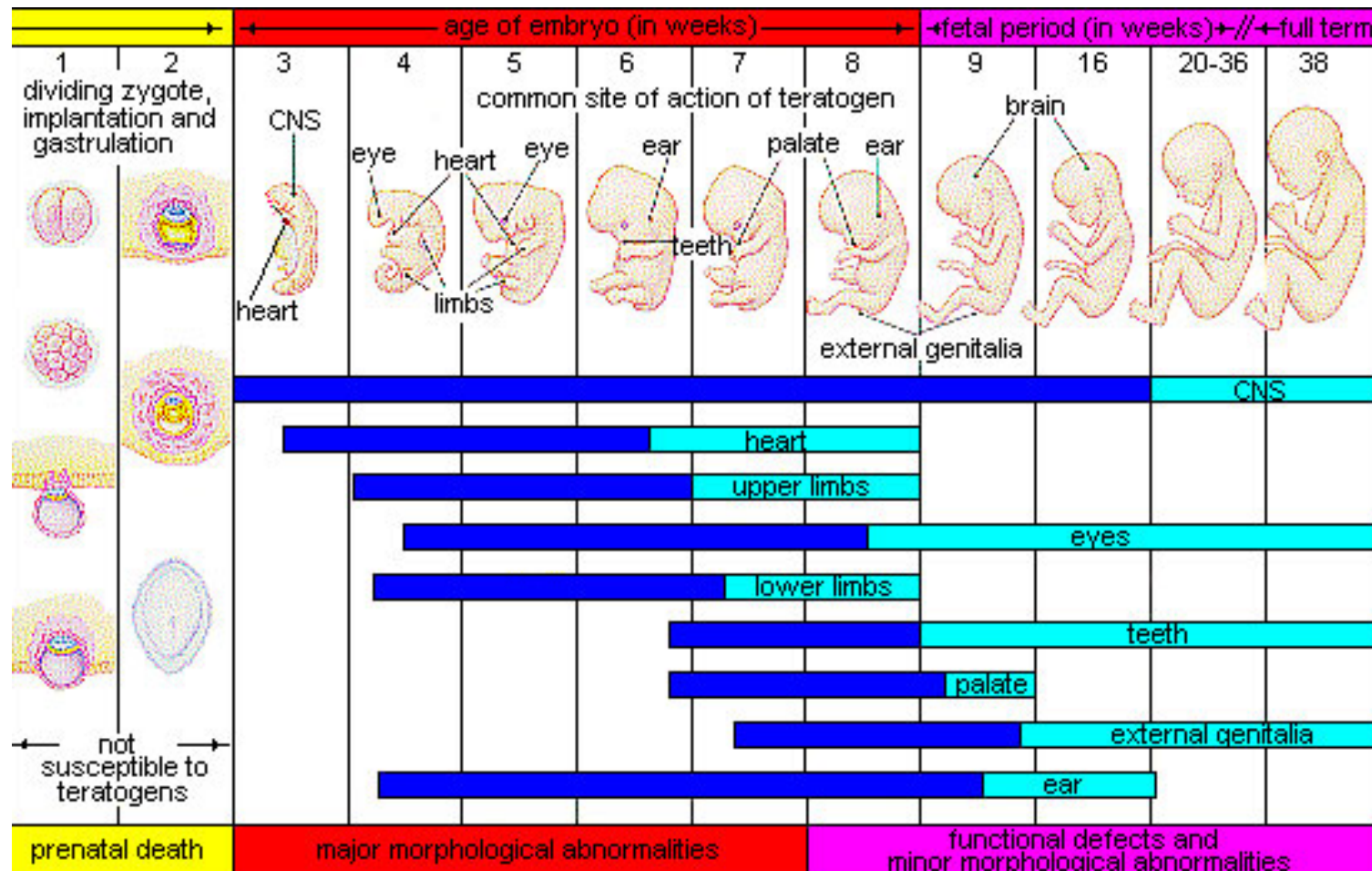
LIST OF PAPERS

- **Tarazi 2022** - Post-gastrulation synthetic embryos generated ex utero from mouse naive ESCs Filippo
experimental manuscript, differentiation factors, molecular biology
- **Shindo 2022** - Versatile roles for histones in early development
review, molecular biology Lana
- **Paloviita 2021** - The non-coding genome in early human development
review, molecular biology Jorge
- **Noli 2016** - Potential of human twin embryos generated by embryo splitting in assisted reproduction and research Denise
review, interesting embryo manipulation
- **Hoekzema 2017** - Pregnancy leads to long-lasting changes in human brain structure
experimental manuscript, NMR Brina

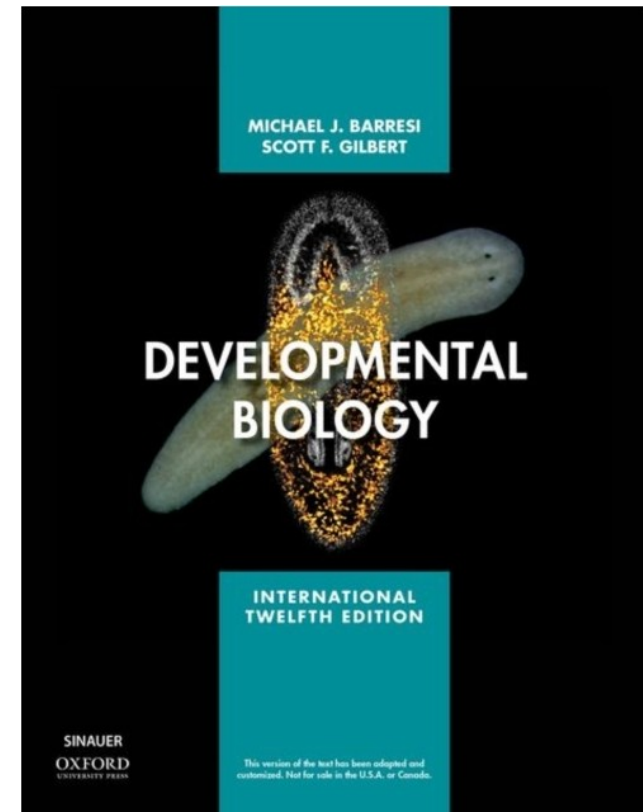
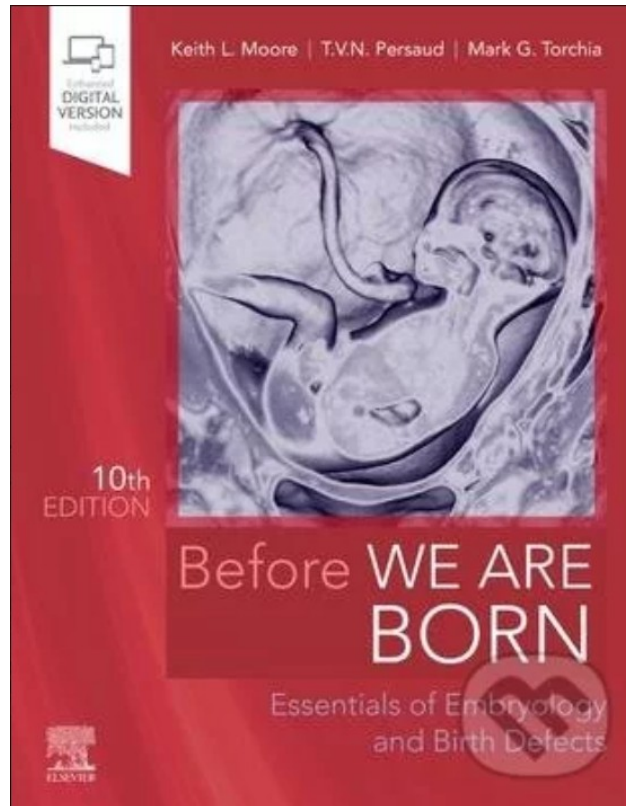
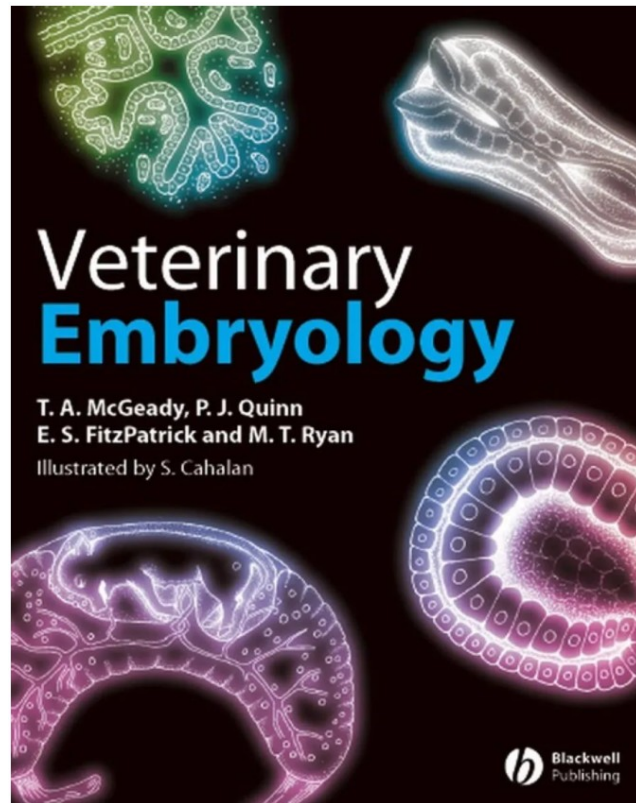
LIST OF PAPERS

- **Graves 2013** - Newborn Transition
review, medical Ximena
- **Einspieler 2021**- Fetal movements: the origin of human behavior
review, medical Kun
- **Cavaliere 2017** - A 14-day limit for bioethics: the debate over human embryo research
review, ethical
- **Ayala 2015** - Cloning humans? Biological, ethical, and social considerations
review, ethical

TIMING



BOOKS



INFORMATION SOURCES

Carnegie Stage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Human	Days 1	2-3	4-5	5-6	7-12	13-15	15-17	17-19	20	22	24	28	30	33	36	40	42	44	48	52	54	55	58
Mouse	Days 1	2	3	E4.5	E5.0	E6.0	E7.0	E8.0	E9.0	E9.5	E10	E10.5	E11	E11.5	E12	E12.5	E13	E13.5	E14	E14.5	E15	E15.5	E16
Rat	Days 1	3.5	4-5	5	6	7.5	8.5	9	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5

Note these Carnegie stages are only approximate day timings for average of embryos. **Links:** Carnegie Stage Comparison

Comparison of human and mouse embryo (**21 d**)

https://embryology.med.unsw.edu.au/embryology/index.php/Category:Mouse_E12

Atlas of mouse embryo

http://www.emouseatlas.org/eAtlasViewer_ema/application/ema/kaufman/plate_25a.php

Chick embryo developmental stages (**21 d**)

https://embryology.med.unsw.edu.au/embryology/index.php/Hamburger_Hamilton_Stages

European mole developmental stages (talpa europea) (**28 d**)

https://www.researchgate.net/publication/250068036_Developmental_Stages_and_Growth_Rate_of_the_Mole_Talpa_occidentalis_Insectivora_Mammalia

Atlas of danio rerio development (**3 d** till the egg is hatching)

<https://bio-atlas.psu.edu/>

Data For Carnegie Stages Comparison Graph (Species/Days)

Species	Stage	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Human ^[2]	Days	20	22	24	28	30	33	36	40	42	44	48	52	54	55	58
baboon ^[3]	Days	23	25	27	28	29	30	31	33	35	37	39	41	43	45	47
monkey ^[4]	Days	21	22	25	28	29	30	32	34	36	37	38	40	42	44	46
marmoset ^[5]	Days	57		60		64		67				74				
mouse ^[6]	Days	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16
rat ^[7]	Days	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5
hamster ^[8]	Days	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17
guinea pig ^{[9][10]}	Days	14.5	15	15.5	17	18	19	20	21	22	23	24	25	26	27	29
rabbit ^[11]	Days	8	8.5	9.5	10.5	11	12	12.5	13.5	14	14.5	15.5	16	16.5	17	18
sheep ^[12]	Days	15	16	17.5	18.5	19.5	20.5	22	23	24.5	25.5	27.5	29.5	30	33	
pig ^[13]	Days	14	15	16	17	18	19	20.5	21.5	23	24	25.5	27.5	29	30.5	32.5
chicken ^[14]	Days	1	1.5	2	2.25	2.5	3	3.25	3.75	4.75	5.5	6.25	7.25	7.75	8.5	10
dog	Days						27	28	29	30	34	36	37			
bat ^[15]	Days			40		44	46	50	54	60		70		80		

- . . - .

SAMPLES

Homo Sapiens Sapiens

- H.S.S. embryos 6th – 22nd week iud (46 weeks)

Mus Musculus (mouse)

- M.M. E12 = 5-6th week iud H.S.S. (21 days)
- M.M. E14,5 = 7.-8. week iud H.S.S.

Gallus Gallus (chicken)

- G.G. HH10 (1,5 d) = 3rd week iud H.S.S. (21 days)
- G.G. HH20 (3,5 d) = 5th week iud H.S.S.
- G.G. HH24 (4,5 d) = 6th week iud H.S.S.
- G.G. HH26 (5D) = 6,5th week iud H.S.S.
- G.G. Hh28 (5,5-6D) = 7th week iud H.S.S.

Talpa Europea (Mole)

- T.E. 16D = beginning of organogenesis (29 days)
- T.E. 27d = just before the birth

Mesocricetus Auratus (hamster)

- M.A. 13,5D= 6. týden iuv H.S.S. (17days)
- M.A. 15D= just before the birth

Danio Rerio (zebrafish)

- Zebrafish 5 days – larval stadium (hatching of embryo in 3rd day)