Comparative Cartilage Biology

1. Are shark cartilage mineralisation mechanisms homologous to those of other vertebrates?

2. How big can chondrocytes get in the hypertrophic stage?

3. Does support from subchondral bone affect overlying cartilage regeneration?

4. Evolution and development of chondrichthyan cartilage and mineralization of cartilage

5. How can researchers best facilitate the use of cartilage samples they no longer need?

6. How do chondrocytes mechanosense?

7. How much do we know about optimal cartilage cell culture conditions?

8. How did neural crest cartilage evolve separate from mesoderm derived cartilage?

9. What is the genetic basis for the orgin of mineralizing cells in vertebrates?

10. Is cartilage calcification induced similarly in all tetrapods prior to endochondral ossification?

11. When is the debate about calcification of cartilaginous fishes going to end?

12. When did tessellated calcified cartilage arise and under what selective pressures?

13. What is the relationship between notochord and cartilage?

14. What is a good gene panel to define a mature chondrocyte, can we use ratios of genes?

15. If cartilage is avascular, how can chondrocytes be maintained?

16. What is the relationship between primary and secondary cartilage?

17. What molecular markers define chondrocytes?

18. What would be a good 3D control for culturing primary chondrocytes in vitro?

19. What are these peculiar features in shark cartilage? *(see image)*

20. Which mechanisms underlie dedifferentiation of cartilage during regeneration?

21. How is the patterning of the cartilage elements in limbs and vertebrae determined?

22. How do chondrocytes communicate with each other?

23. Are all cells forming cartilage chondrocytes?

24. How do chondrichthyan cartilage data shed light on osteichtyan cartilage?

25. What are the evolutionary trends of cartilage mineralisation in vertebrate lineages?

26. Does the degree of skeletal mineralization change through vertebrate evolution?

27. When did perichondral bone arise and under what selective pressures?

28. How does cyclostome cartilage differ from vertebrate cartilage?

29. What controls the development of hierarchical structure of articular cartilage?

30. Do chondrocytes exhibit polarity?

31. Does mechanosensing in chondrocytes change across species?

32. Do optimal culture conditions for chondrocytes differ across animal groups?

33. How diverse is non-vertebrate cartilage?

34. How conserved is collagen X expression across animal groups during mineralization?

35. Do all cartilage types exhibit cell hypertrophy?

36. Do all chondrocytes mechanosense?

37. What features define chondrocytes?

38. What markers/features distinguish chondroprogenitors from proliferating chondrocytes?

39. Do all chondrocytes have a primary cilium?

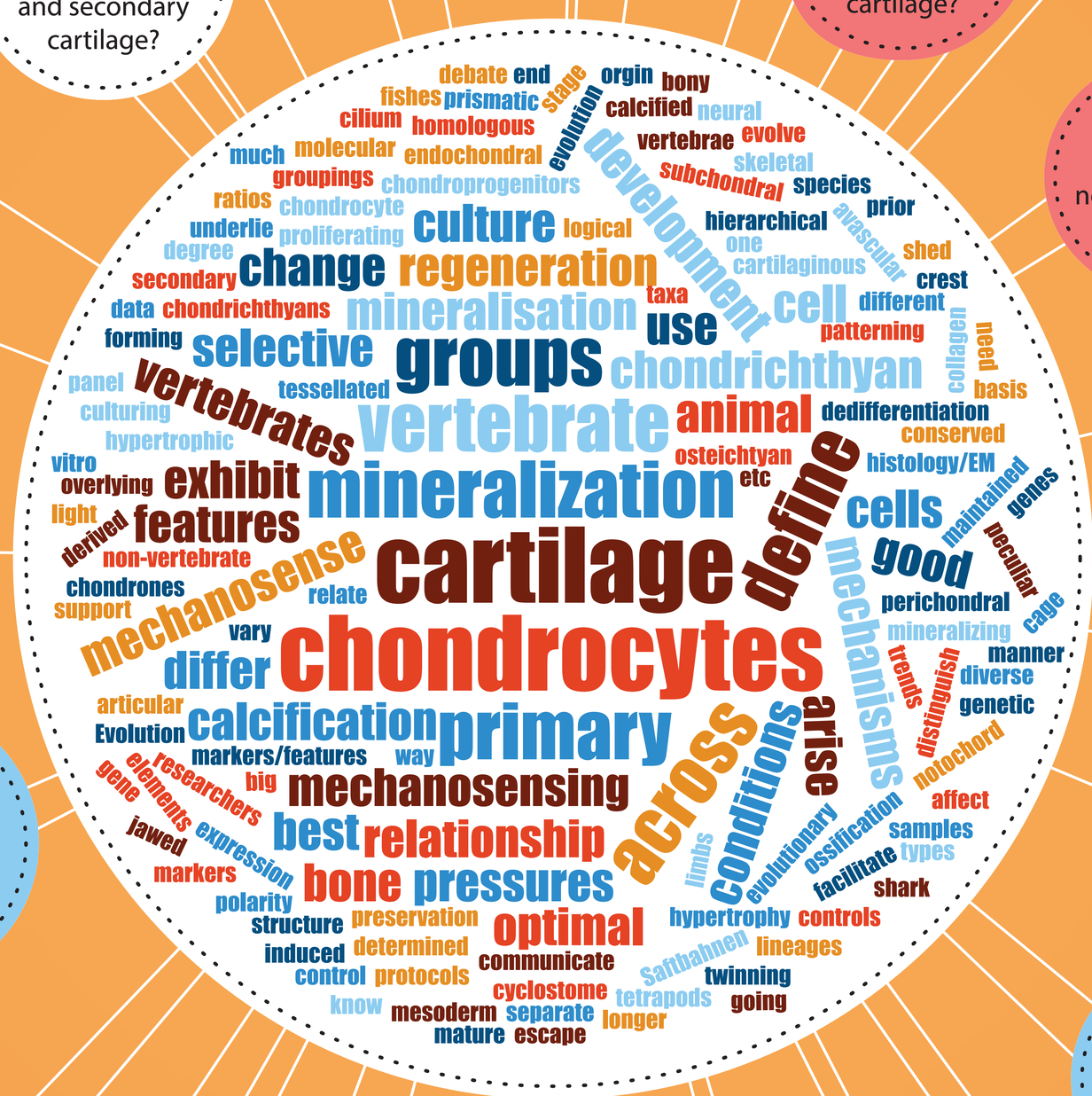
40. What are the best preservation protocols for histology/EM of chondrocytes?

41. How does chondrocyte clustering (twinning, chondrones) affect mechanosensing?

42. What are 'Saftbahnen' and is their function only structural?

43. Can hypertrophic chondrocytes escape from the bony cage they're in?

44. Do cartilage fixation/preservation techniques differ for different taxa?



ANSWER/ADD QUESTIONS: https://ccbconference.wixsite.com/ccb2019

- mineralization
- diversity
- chondrocytes
- mechanosensing
- culture & prep
- other