CLAIMS

1. A method for estimating the age of a fish comprising:

analysing DNA obtained from a fish for the presence of a methylated cytosine at age-associated CpG sites; and

estimating the age of the fish based on methylated cytosine levels at the age-associated CpG sites.

2. The method of claim 1, wherein the age-associated CpG sites are selected from

(i) Table 8 or 9 or a homolog of one or more thereof;

(ii) Table 1, 2 or 3 or a homolog of one or more thereof;

(iii) Table 12 or a homolog of one or more thereof; or

(iv) Table 16 or a homolog of one or more thereof.

3. The method of claim 1, wherein the age-associated CpG sites are selected from Table 8 or 9 or a homolog of one or more thereof.

4. The method of claim 1, wherein the age-associated CpG sites are selected from Table 1, 2 or 3 or a homolog of one or more thereof.

5. The method of claim 1, wherein the age-associated CpG sites are comprised within one or more of the amplicons listed in Table 5.

6. The method of claim 1, wherein the presence of methylated cytosine is analysed at five or more, 10 or more, 15 or more, 20 or more, or 25 or more of the age-associated CpG sites.

7. The method of claim 1, wherein analysing DNA comprises multiplex PCR and DNA sequencing.

8. The method of claim 7, wherein the multiplex PCR uses two or more primer pairs configured to amplify a region of the DNA comprising the age-associated CpG sites.

9. The method of claim 8, wherein at least one of the primers (i) is selected from Table 4; and/or (ii) can be used to amplify the same CpG site as the primers of (i); and/or (iii) hybridizes to a region of the DNA within 100 or 50 or 20 base-pairs of a primer of (i).

10. The method of claim 1, wherein analysing DNA comprises determining the methylation beta value of the age associated CpG sites.

11. The method of claim 1, wherein the DNA analysed is from caudal fin and/or a skin biopsy.

12. The method of claim 1, wherein the fish is a member of the subclass Elasmobranchii.

13. The method of claim 12, wherein the fish is a shark.

14. The method of claim 1, wherein the fish is a member of the infraclass Teleostei.

15. The method of claim 14, wherein the fish is Zebrafish, Yellow fin tuna, Skipjack tuna, Atlantic cod, Atlantic herring, Alaska pollock, Australian lungfish, Mary River Cod or Atlantic Salmon.

16. The method of claim 1, wherein the age-associated CpG sites are identified by:

analysing DNA obtained from the species of fish of different chronological ages for the presence of methylated cytosine at CpG sites; and

using a statistical algorithm to identify age-associated CpG sites.

17. A method of identifying an age-associated CpG site for a second species of fish comprising

(i) analysing DNA of the second fish species for a candidate age-associated CpG site corresponding to an age-associated CpG site identified for a first species of fish;

(ii) analysing the methylation patterns of a candidate age-associated CpG site identified in (i) in different ages of the second species of fish to determine if it is an age-associated CpG site in that second fish species.

18. The method of claim 17, wherein the first fish species is zebrafish and step (i) comprises analysing DNA of the second fish species for a candidate age-associated CpG site corresponding to an age-associated CpG site listed in Table 1, 2 or 3.

19. The method of claim 17, wherein the first fish species is a shark species and step (i) comprises analysing DNA of the second fish species for a candidate age-associated CpG site corresponding to an age-associated CpG site listed in Table 8 or 9.

20. The method of claim 1, wherein the age-associated CpG sites are identified by the method according to claim 17.