

CLAIMS

1. A thermostable polypeptide possessing FGF2 activity and having a sequence identity of SEQ ID NO: 2, or a fragment of the said polypeptide, with FGF2 activity thereof, wherein the said polypeptide or fragment comprises at least an amino acid substitution R31L, and at least two amino acid substitutions selected from a group consisting of V52T, H59F, L92Y, C96Y, S109E, K30I, E54D, S94I, C96N, E108H, T121P.
2. The thermostable polypeptide or fragment according to claim 1, wherein the polypeptide or fragment comprises amino acid substitutions R31L, V52T and H59F.
3. The thermostable polypeptide or fragment according to any of claims 1 or 2 further comprising at least five amino acid substitutions selected from a group consisting of V52T, H59F, L92Y, C96Y, S109E, K30I, E54D, S94I, C96N, E108H, T121P.
4. The thermostable polypeptide or fragment according to claim 3, wherein the polypeptide or fragment comprises amino acid substitutions R31L, V52T, H59F, L92Y, C96Y, S109E.
5. The thermostable polypeptide or fragment according to any of claims 1 to 4 comprising at least eight amino acid substitutions selected from a group consisting of V52T, H59F, L92Y, C96Y, S109E, K30I, E54D, S94I, C96N, E108H, T121P.
6. The thermostable polypeptide or fragment according to claim 5, wherein the polypeptide or fragment comprises amino acid substitutions K30I, R31L, V52T, E54D, H59F, L92Y, C96Y, E108H, S109E.
7. The thermostable polypeptide or fragment according to claim 5, wherein the polypeptide or fragment comprises amino acid substitutions R31L, V52T, E54D, H59F, L92Y, S94I, C96N, S109E, T121P.
8. The thermostable polypeptide or fragment according to any of claims 1 to 7 further comprising at least ten amino acid substitutions selected from a group consisting of V52T, H59F, L92Y, C96Y, S109E, K30I, E54D, S94I, C96N, E108H, T121P.

9. The thermostable polypeptide or fragment according to claim 8, wherein the polypeptide or fragment comprises amino acid substitutions K30I, R31L, V52T, E54D, H59F, L92Y, S94I, C96N, E108H, S109E, T121P.
10. The thermostable polypeptide or fragment according to any of claims 1 to 9 for use in regenerative medicine and other medical applications.
11. Use of the thermostable polypeptide or fragment according to any of claims 1 to 9 for cosmetics.
12. A culture medium suitable for culturing human pluripotent stem cells in an undifferentiated state, comprising an effective amount of the thermostable polypeptide or fragment defined in any of claims 1 to 9, in the range of 1.0 ng/ μ l to 100 ng/ μ l of culture medium.
13. The culture medium according to claim 12 wherein the polypeptide or fragment comprises amino acid substitutions defined in any of claims 2,4,6,7 and 9.