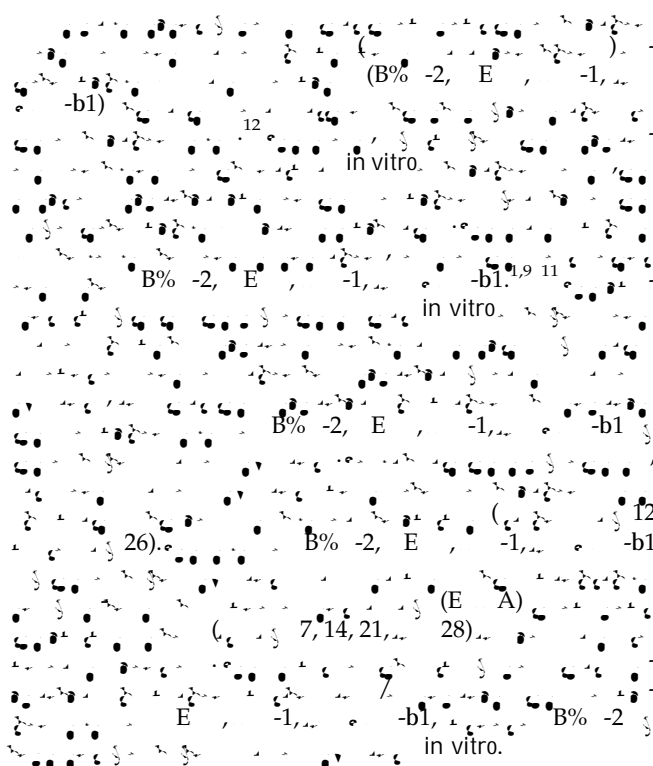
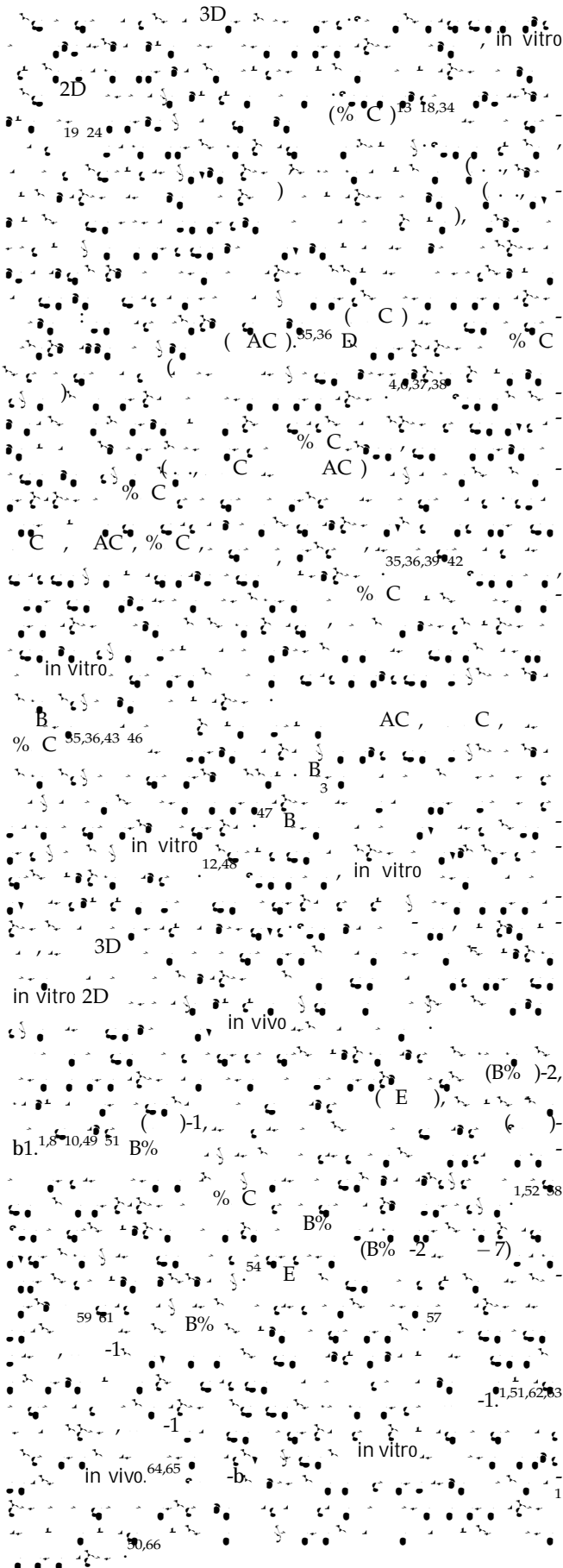


Ossifying Bone Marrow Explant Culture



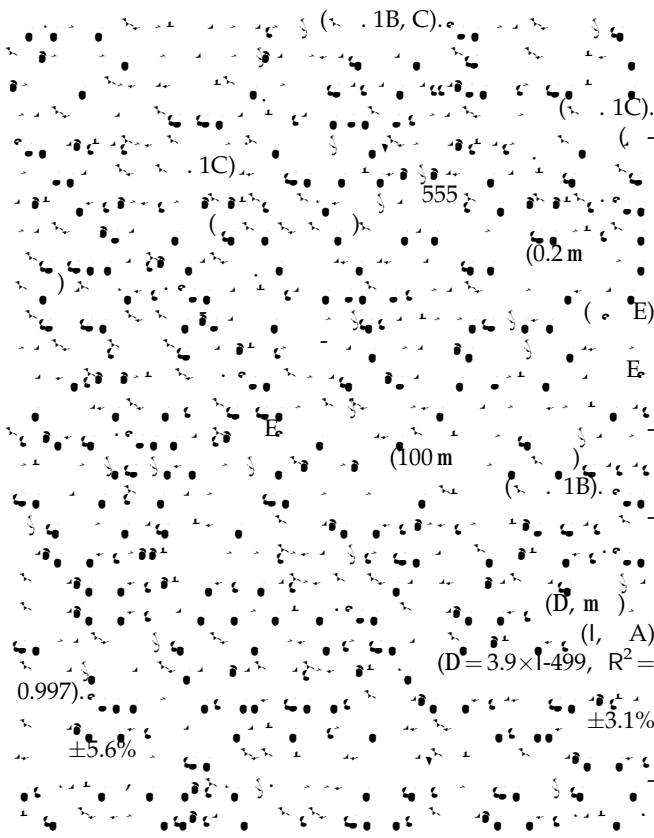
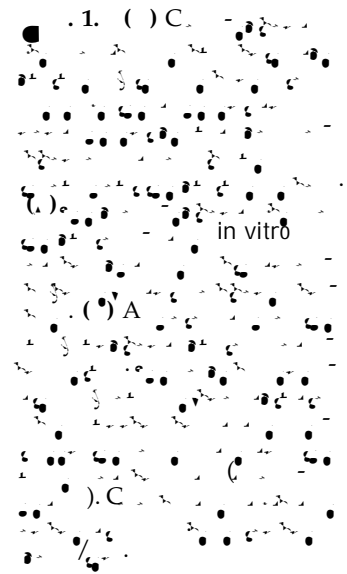
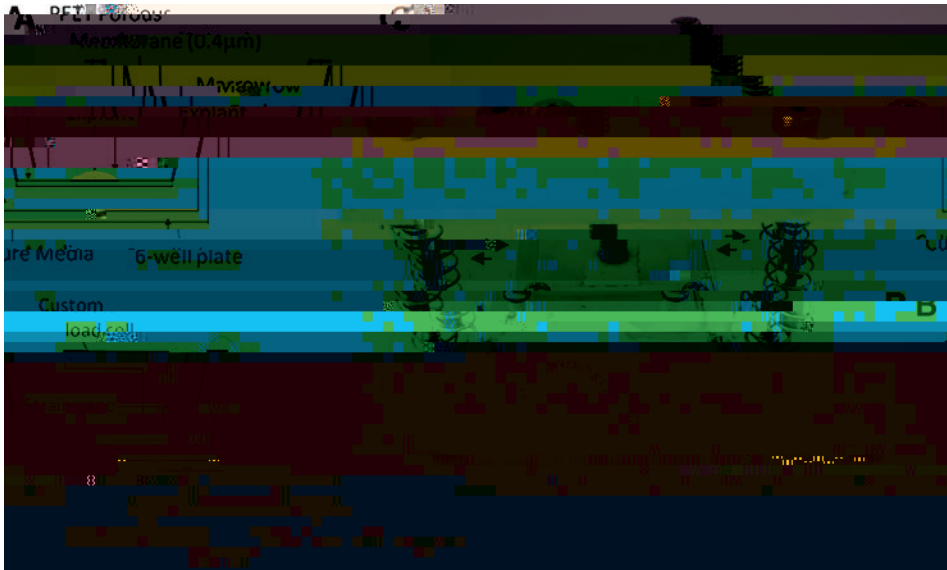
Materials and Methods

In vitro culture conditions

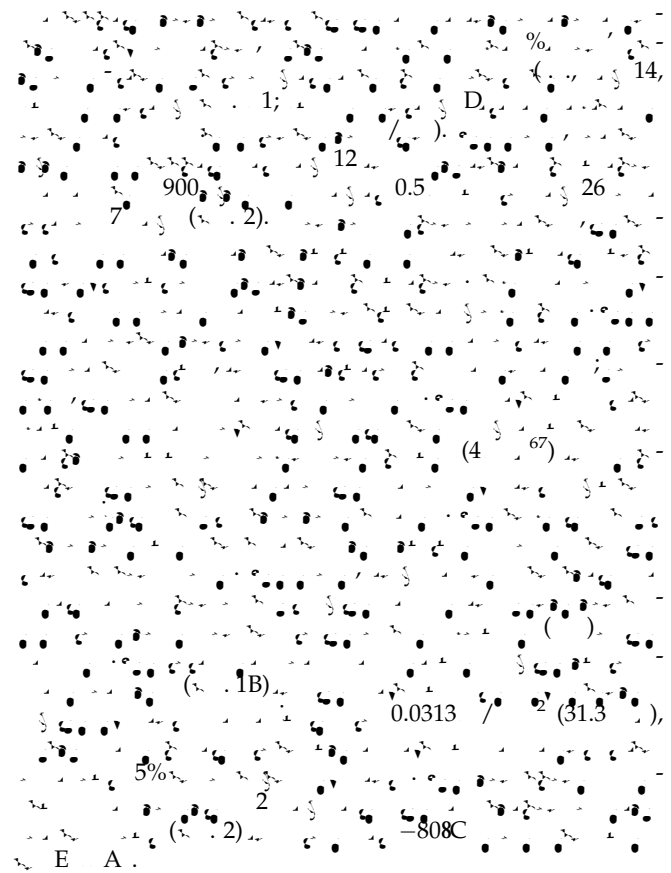
B
80 90
-E
A C (300 324)
C %
E (0.4m
;C) 7m (1A)
G
12
et al.⁴⁸:
(a-%E%) (), 10% % C-
(B ;), 60 / (), 2.5m /
(), 50m / (), 5 %
-b- (% B), 3.5 /
(). 378C, 5% C 2r
95% (28)
()
-80°C

Development and characterization of in vitro mechanical loading system

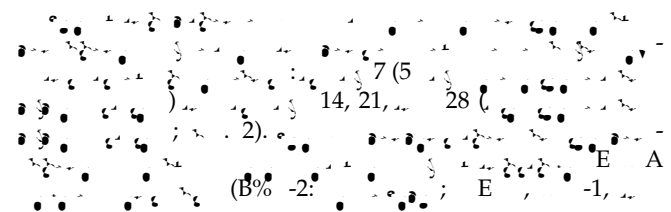
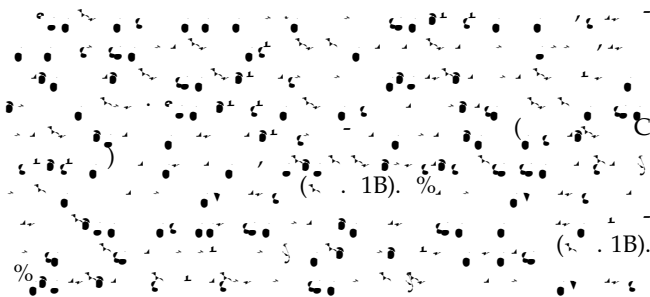
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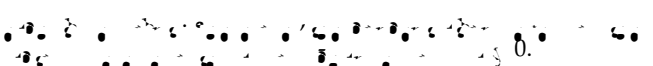
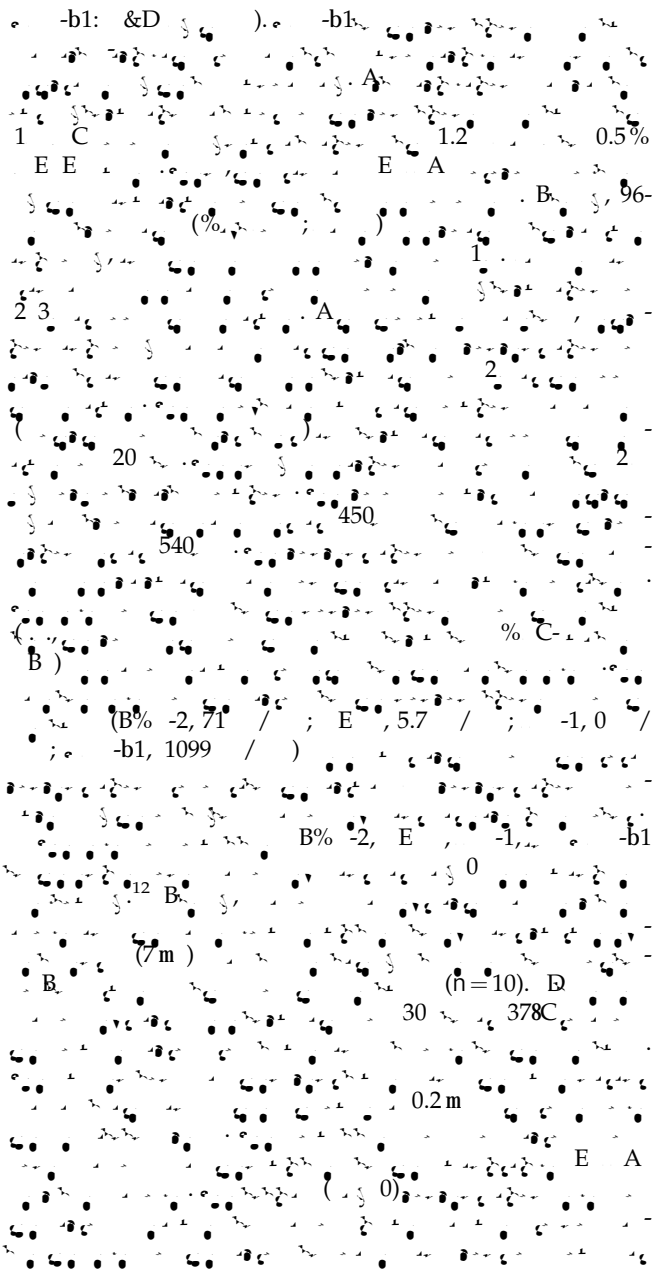
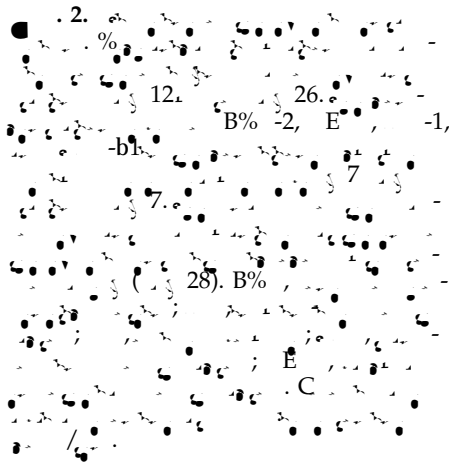


Mechanical stimulation of ossifying marrow explants

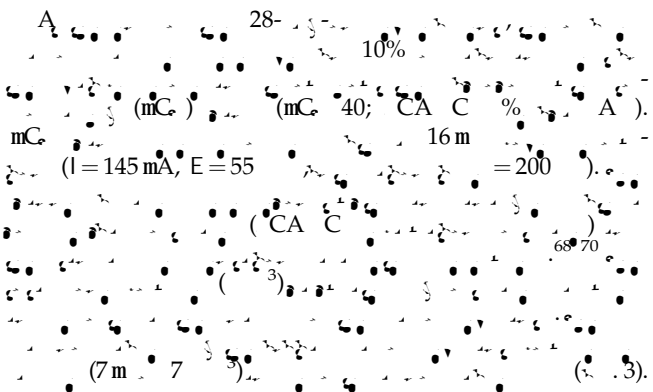


Quantification of BMP-2, VEGF, IGF-1, and TGF- β 1 levels produced by ossifying marrow explants

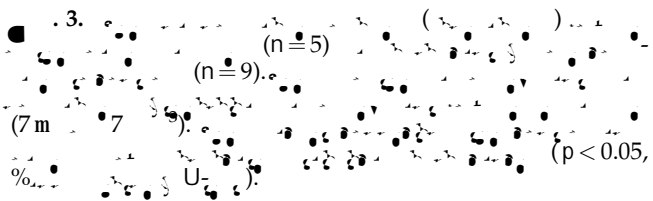
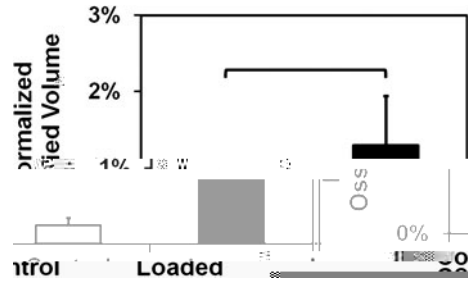
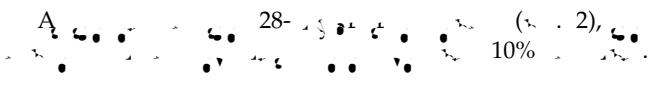


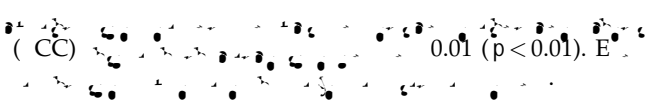
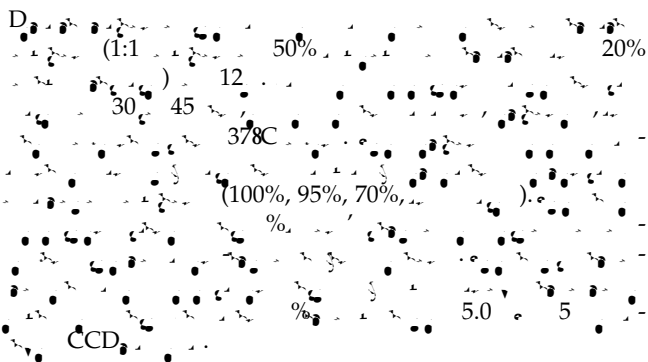
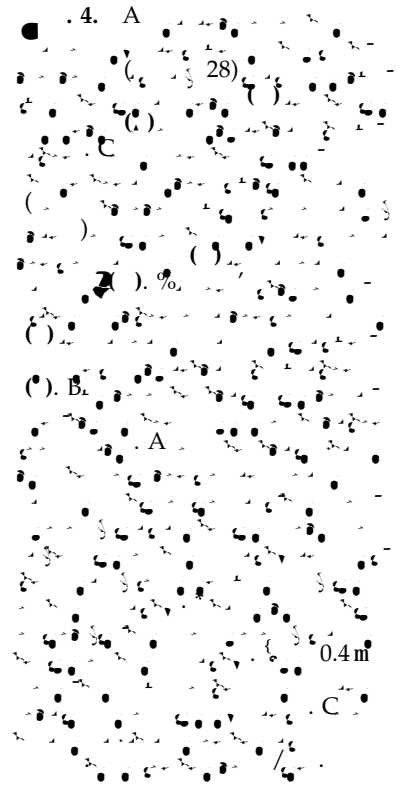


Microcomputed tomography of ossifying marrow explants

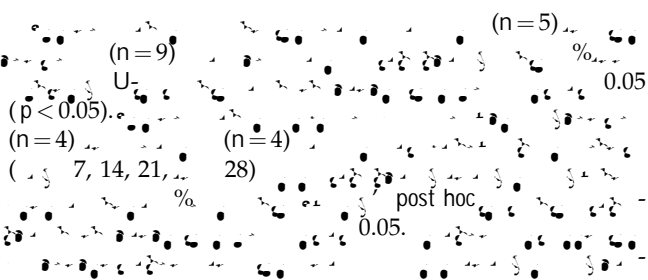


Histology of ossified marrow explants for matrix typification



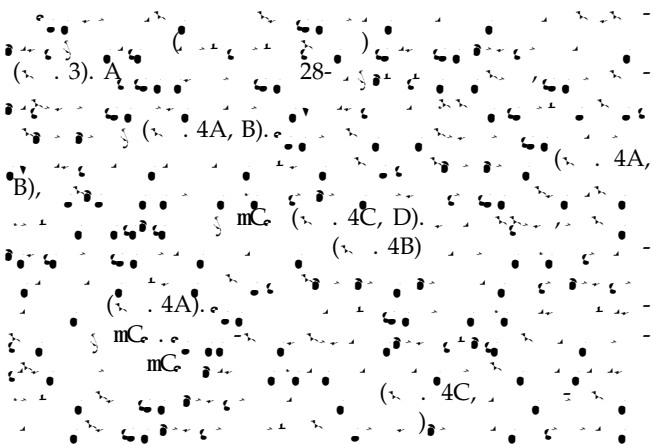


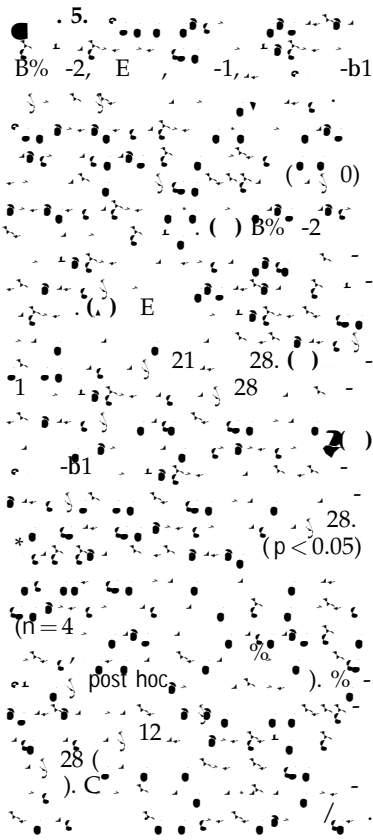
Statistical analysis



Results

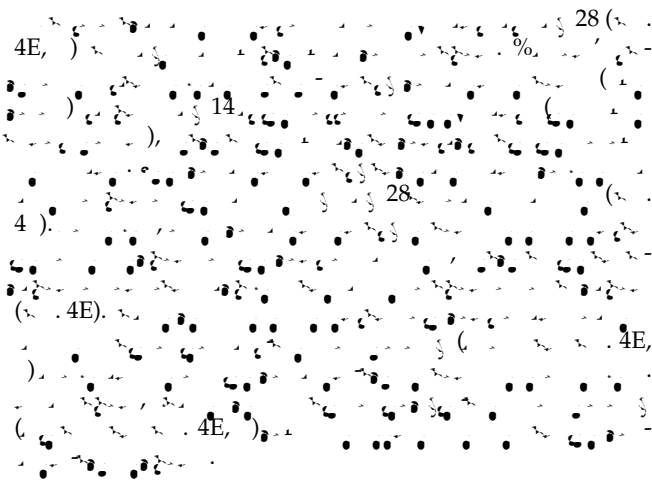
The effect of mechanical stimulation on the final OV of marrow explants



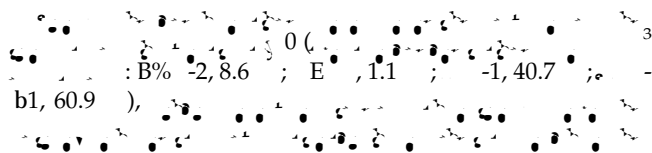


(n=4) post hoc. 28. (p<0.05) 12. 28. C.

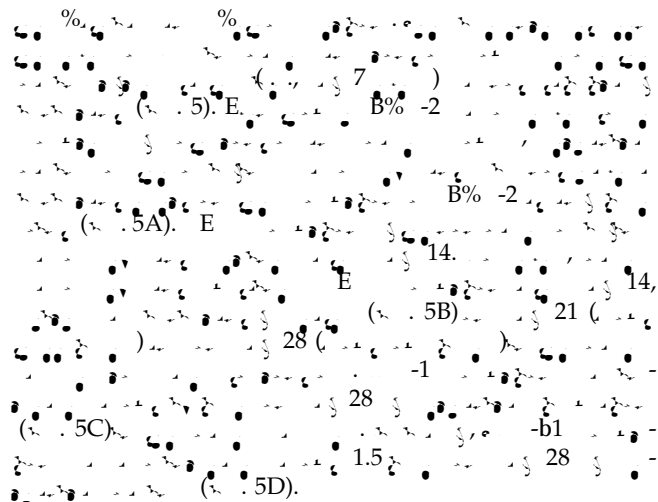
Morphological characterization of ossified marrow explants



The effect of mechanical stimulation on the production of BMP-2, VEGF, IGF-1, and TGF-β1 by ossifying marrow explants



(CC: 0.899, p<0.01) (CC: 0.850, p<0.01) (CC: 0.907, p<0.01)

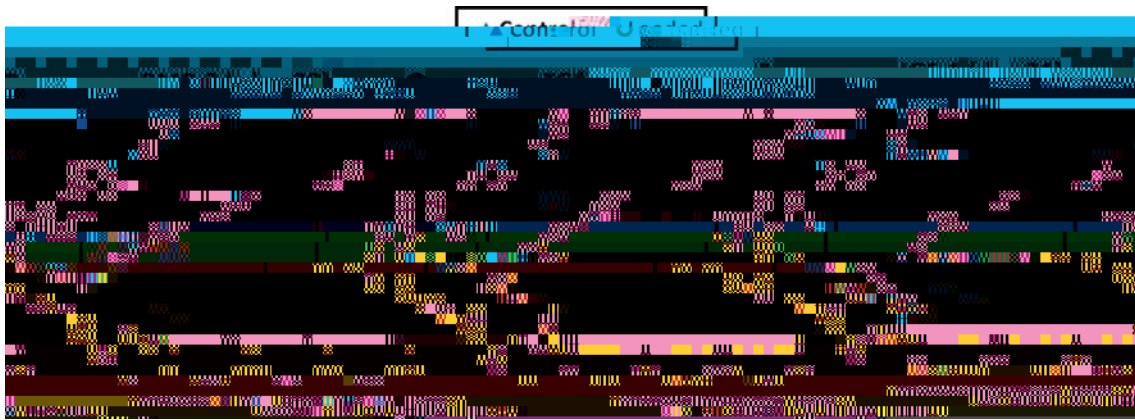


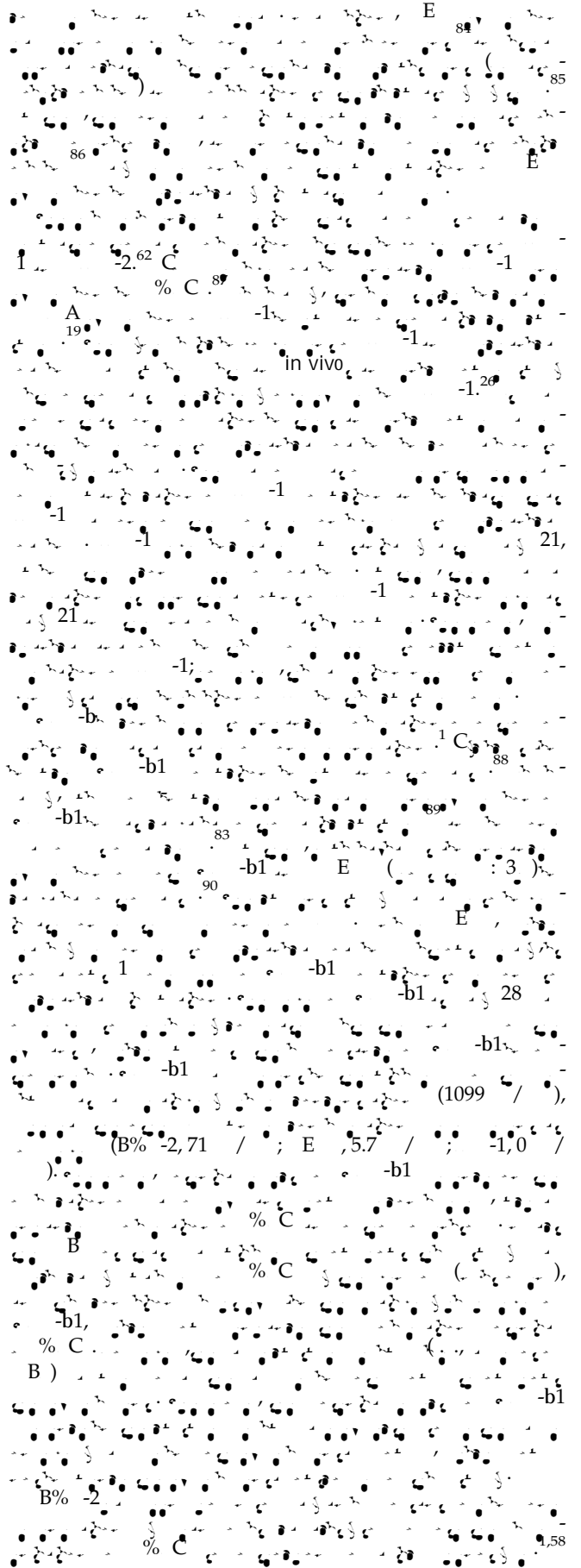
Correlation between the levels of BMP-2, VEGF, IGF-1, TGF-β1, and the final OV of marrow explants

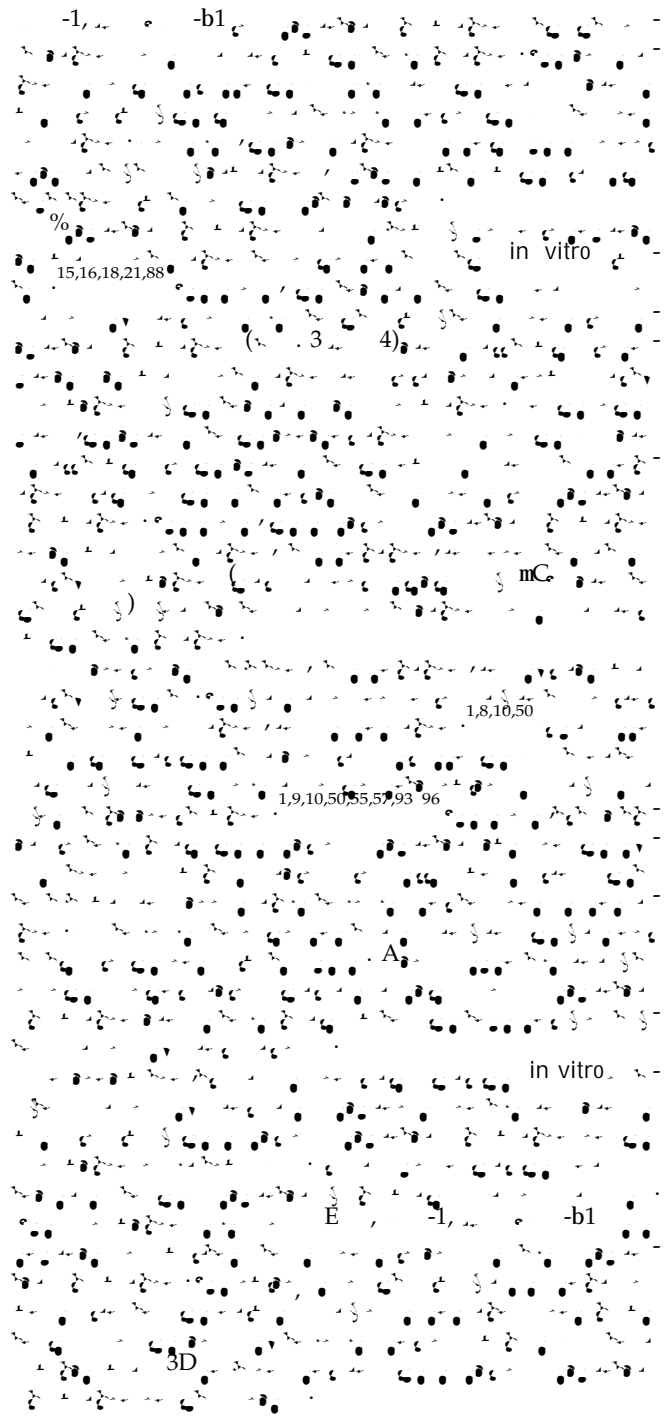
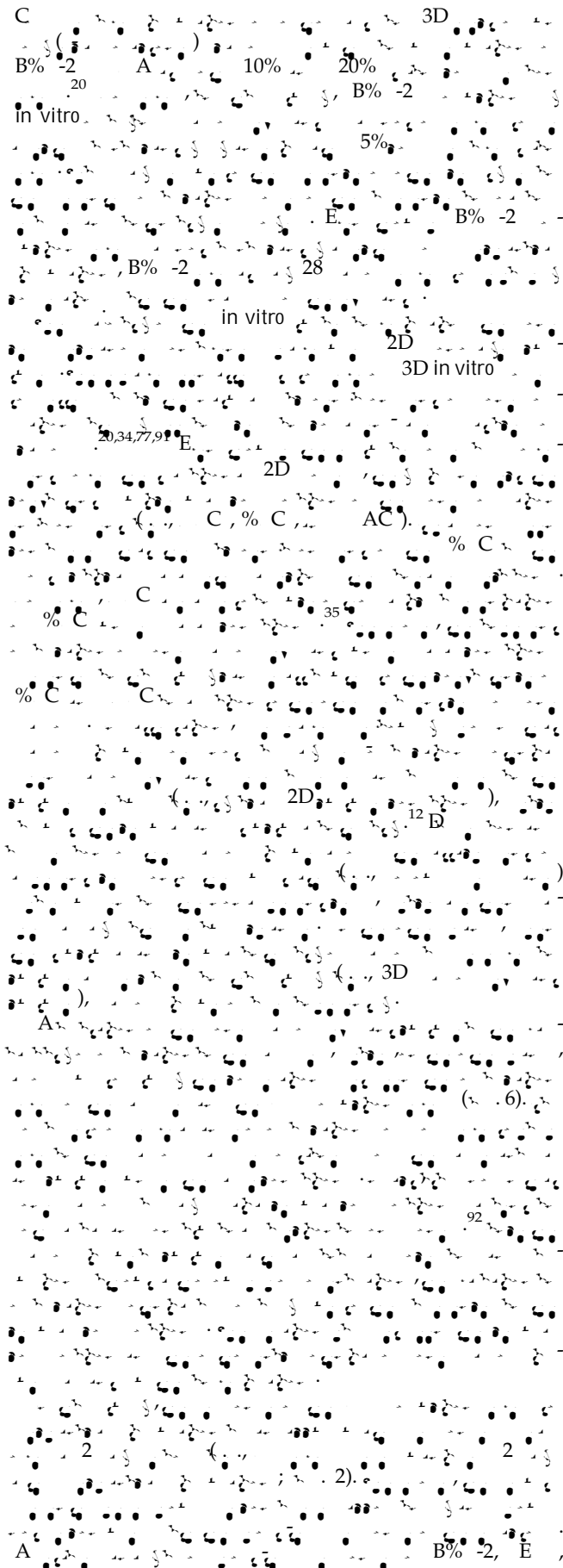
(CC: 0.899, p<0.01) (CC: 0.850, p<0.01) (CC: 0.907, p<0.01)

Discussion

in vitro.







Acknowledgment

... %a ...

Disclosure Statement

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References

1. ... D. ... A. ... E. ... A. ... B. ... A 84, 1032, 2002.

2. C, A, B, B, 6, 171, 1987.

3. D, %, %, C, %, E, A, C, B, 20, 1232, 2002.

4. B, A.A., %, C, B, 16, 155, 1998.

5. D, G, B, B, 83, 157, 2001.

6. C, B, %, A, B, 18, 959, 2000.

7. B, A, D, C, %, %, A, %, C, 23, 1066, 2005.

8. C, G, D, %, B, D, E, A, %, C, B, 88, 873, 2003.

9. E, B, In vitro, E, 13, 2311, 2007.

10. %, B, %, E, 44, 269, 2000.

11. A, B, 16, 247, 1998.

12. A, A, E, A, 16, 2295, 2010.

13. C.A., %, D, C, A, C, C, %, D, C, (E 1/2), B, 36, 1087, 2003.

14. D, B, E, (B% -2), A, E, 12, 3459, 2006.

15. C, %, E, B, B, E, 12, 601, 2007.

16. %, B, B, E, 2, B, %, 23, 219, 2005.

17. %, C, C, C, %, E, -1, C, 1, E, -1, %, 37, 453, 2008.

18. B, D, %, 10, 1225, 1995.

19. C, B, B, %, 58, 271, 2007.

20. E, B, %, 0, 147, 2000.

21. B, A, A, C, D, C, C, B, 41, 1095, 2008.

22. A, E, D, B, E, in vitro, C, 10, 61, 2009.

23. D, B, A, A, C, B, C, 277, 23934, 2002.

24. A, D, E, 136, 528, 1995.

25. D, A, %, E, E, C, in vivo, B, E, A, 12, 531, 2007.

26. C, C, C, B, B, in vivo, D, B, %, 17, 493, 2002.

27. A, %, G, D, %, E, A, D, B, B, in vivo, 63, 442, 1998.

28. D, %, E, A, C, %, E, %, 27, 1123, 2009.

29. B, A, E, in vitro, (3D), C, B, 15, 405, 2005.

30. C, %, E, B, B, A, D, C, E, E, A, C, %, B, 2, 405, 2009.

31. D, A, %, A, %, B, D, B, %, A, %, Ex vivo, 3D, E, A, 14, 117, 2008.

32. E, %, C, E, 3D, B, %, 1, 1403, 2004.

33. C, %, A, A, E, C, B, %, 10, 1225, 1995.

34. %... B... D...
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35. ... C...
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36. E...
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37. B... D... C... A... %...
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38. C... A... %... 641,
1991.

39. D... A, E... B...
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40. ... D... %...
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41. ... E...
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42. E...
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43. C... %... B... C...
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44. D... E... C... A... B... %... %...
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46. %... B... C... E... A...
... B... A...
7, 1699, 1997.

47. %... B... C, A... E... A...
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48. ... E, A... %... E... A... %...
... A... B... 248, 449, 1987.

49. ... A... %... 36
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50. C... C... E... A... D...
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51. ... B... B... %...

... 1...
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52. ... B... B... %... 12,
343, 1997.

53. ... B... 13, 2, 2002.

54. ... D... B... C... B... C...
%... B...
... B... A... 87, 1367, 2005.

55. B... E... D...
B... B... 250, 231, 2002.

56. B... %... C... C... A...
B... 16, 208, 2001.

57. ... A... B... C...
C... E...
4... 110, 751, 2002.

58. ... B...
... A... 77, 626,
2007.

59. ... A... %...
E...
%... 5, 623, 1999.

60. ... B... %... B... C... D...
A... B... C... A, D...
E...
A... A... 9656, 2002.

61. D... A, B... E... D... 86,
937, 2007.

62. ... D... C... %...
B... D... C... B... %...
13, 201, 1991.

63. A... A... %... D...
C... 53, 97, 1993.

64. ... %... C... %... C... E...
... E... 122, 254, 1988.

65. ... D... A... 31, 429, 1993.

66. ... B... %... %...
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C... B... 115, 1091, 1991.

67. C... C... B... %... B...
C... 2001.

68. %... E... %... D... C... B... A... B...
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... B... 44, 335, 2009.

69. % C, D, B, D
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70. %E, D, % B, D
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71. A, A, B, E 36, 1978, 2008.

72. %, C 161, 54, 1968.

73. E, C, A, % B, %
12, 1295, 1997.

74. C, E, C.A., C, D,
%, A, E, G
355 132, 1998.

75. A, B, D, %, D, A, A,
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76. C, %
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77. %, B, B, D.B., D,
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78. C, E, B
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79. C, C, B, B, 32, 217, 1999.

80. D, B, A, %, A,
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2657, 2006.

81. A, C, %, B,
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82. %, %, D.A., D.C.,
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73, 2007.

83. A, A, E, A, B, E 37, 445, 2009.

84. E, A,
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85. A, %, C, C, D,
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86. C, %, A, C,
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93. %, B
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94. %, C, A, %, %, E.A.
242, 1528, 1988.

95. B, %, 1, 1, A,
74, 604, 2003.

96. A, D.A. In vitro, E,
25, 677, 2004.

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