

# Ultrasound stimulation of different dental stem cell populations: role of mitogen-activated protein kinase signaling

Gao, Qianhua; Walmsley, Anthony; Cooper, Paul; Scheven, Ben

DOI:

[10.1016/j.joen.2015.12.019](https://doi.org/10.1016/j.joen.2015.12.019)

License:

None: All rights reserved

*Document Version*

Peer reviewed version

*Citation for published version (Harvard):*

Gao, Q, Walmsley, A, Cooper, P & Scheven, B 2016, 'Ultrasound stimulation of different dental stem cell populations: role of mitogen-activated protein kinase signaling', *Journal of Endodontics*, vol. 42, no. 3, pp. 425-431. <https://doi.org/10.1016/j.joen.2015.12.019>

[Link to publication on Research at Birmingham portal](#)

**Publisher Rights Statement:**

Eligibility for repository: Checked on 9/3/2016

**General rights**

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

**Take down policy**

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

# UNIVERSITY OF BIRMINGHAM

The University of Birmingham (Live System)  
Research at Birmingham

## Ultrasound Stimulation of Different Dental Stem Cell Populations: Role of MAPK signaling

Gao, Qianhua; Walmsley, Anthony; Cooper, Paul; Scheven, Ben

### *Document Version*

Preprint (usually an early version)

### *Citation for published version (Harvard):*

Gao, Q, Walmsley, A, Cooper, P & Scheven, B 2015, 'Ultrasound Stimulation of Different Dental Stem Cell Populations: Role of MAPK signaling: Ultrasound-stimulated MSC proliferation via MAPKs' *Journal of Endodontics*.

[Link to publication on Research at Birmingham portal](#)

### **General rights**

When referring to this publication, please cite the published version. Copyright and associated moral rights for publications accessible in the public portal are retained by the authors and/or other copyright owners. It is a condition of accessing this publication that users abide by the legal requirements associated with these rights.

- You may freely distribute the URL that is used to identify this publication.
- Users may download and print one copy of the publication from the public portal for the purpose of private study or non-commercial research.
- If a Creative Commons licence is associated with this publication, please consult the terms and conditions cited therein.
- Unless otherwise stated, you may not further distribute the material nor use it for the purposes of commercial gain.

### **Take down policy**

If you believe that this document infringes copyright please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

**Table 1.** DNA sequences, annealing temperatures, cycle numbers and accession numbers for primers used in the sqRT-PCR reaction. All primers were designed using Primer Blast software (<http://ncbi.nlm.nih.gov/tools/primer-blast/>) and manufactured by Invitrogen, UK.

<b>Gene</b>	<b>Sequences</b>	<b>Annealing temperature</b>	<b>Cycle number</b>	<b>Accession number</b>
<i>GAPDH</i>	F-CCCATCACCATCTTCCAGGAGC; R-CCAGTGAGCTTCCCGTTCAGC	60.5	27	NM_017008
<i>CD29</i>	F-AATGGAGTGAATGGGACAGG; R-TCTGTGAAGCCCAGAGGTTT	60.5	27	NM_017022.2
<i>CD90</i>	F-AGCTCTTTGATCTGCCGTGT; R-CTGCAGGCAATCCAATTTTT	60.5	26-33	NM_012673
<i>Vimentin</i>	F-AGATCGATGTGGACGTTTCC; R- GCAGTCCTGGTATTACAG	60.5	27	NM_031140.1
<i>Nanog</i>	F-TATCGTTTTGAGGGGTGAGG; R-CAGCTGGCACTGGTTTATCA	60.5	33	NM_001100781
<i>Klf4</i>	F-ATCATGGTCAAGTCCCAGC; R-ACCAAGCACCATCGTTTAGG	60.5	27	NM_052713
<i>DMPI</i>	F-CGGCTGGTGGTCTCTCTAAG; R-CATCACTGTGGTGGTCCTTG	60.5	31-33	NM_203493.3
<i>OCN</i>	F-TCCGCTAGCTCGTCACAATTGG; R- CCTGACTGCATTCTGCCTCTCT	60.5	33	NM_013414.1
<i>OPN</i>	F- AAGCCTGACCCATCTCAGAA; R-GCAACTGGGATGACCTTGAT	60.5	33	NM_012881.1
<i>BSP</i>	F-ATGGAGATGGCGATAGTTCG; R-TCCACTTCTGCTTCTTCGTTC	60.5	27	NM_012587.2