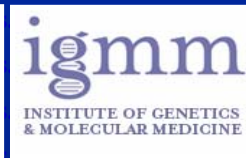


*Methods of assessing bone metabolism:
The bone forming osteoBlasts*



Aymen I. Idris MSc. PhD.

Institute of Genetics and Molecular Medicine

University of Edinburgh

Bone Metabolism:

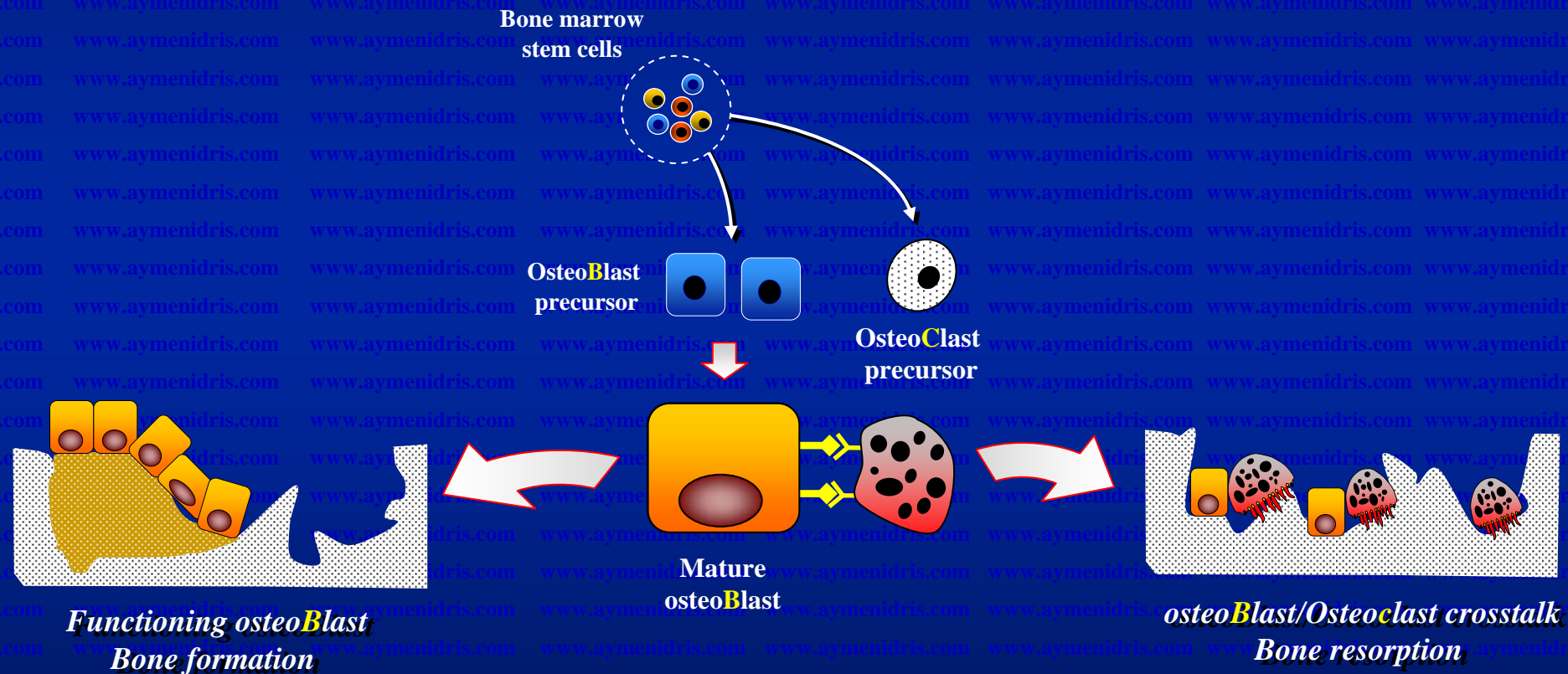
method for assessing bone cell function in vitro

- ✘ How to isolate / generate / maintain bone cells?
- ✘ How to test novel agents with therapeutic potential use for the treatment of bone diseases?
- ✘ How to identify the molecular target or mechanism of action?



osteoblasts

The origin of the bone forming osteoblast

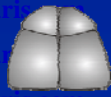


Methods for generating osteoblasts *in vitro*

Calvarial osteoblasts

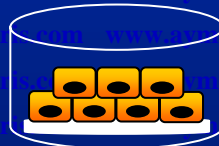


2 days old
C57 BL/6
mice

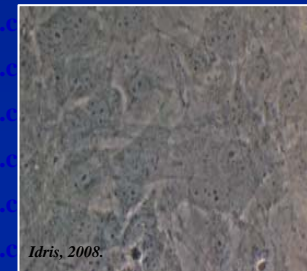


osteoblast

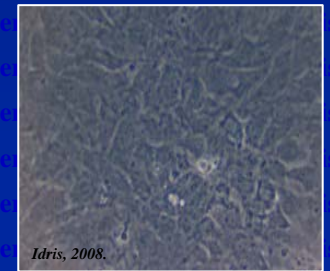
BGP
Vitamin C



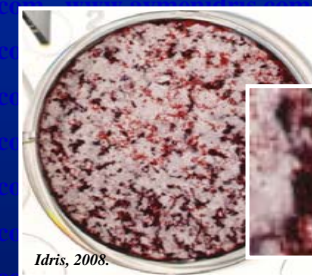
Functioning
osteoblast



Osteoblast viability
AlamarBlue Assay



Osteoblast differentiation
ALK Phos Assay

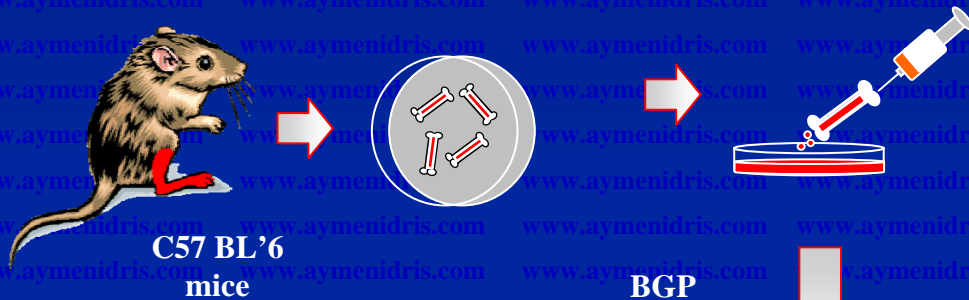


Osteoclast function
Bone nodule assay
Alazarin Red

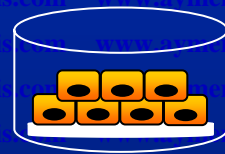
*This culture is ideal for studying
mature osteoblast function*

Methods for generating osteoblasts *in vitro*

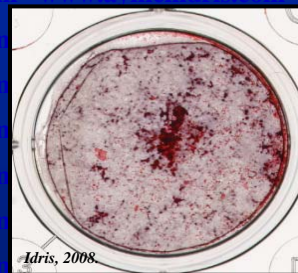
Calvarial and bone marrow generated osteoblasts



This culture is ideal for studying early osteoblast differentiation



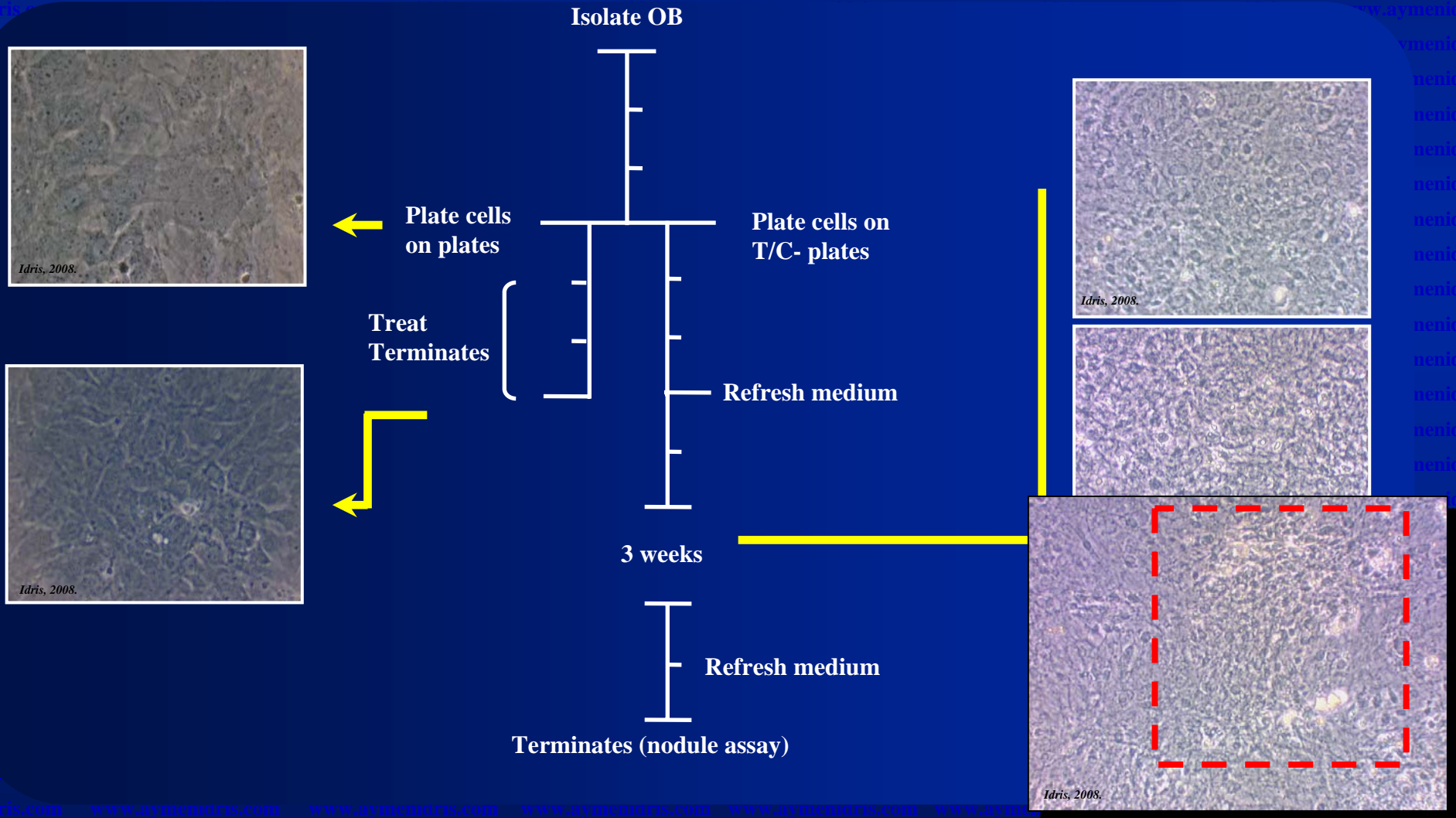
**Functioning
osteoblast**



BM cells
Bone nodule assay
Alazarin Red

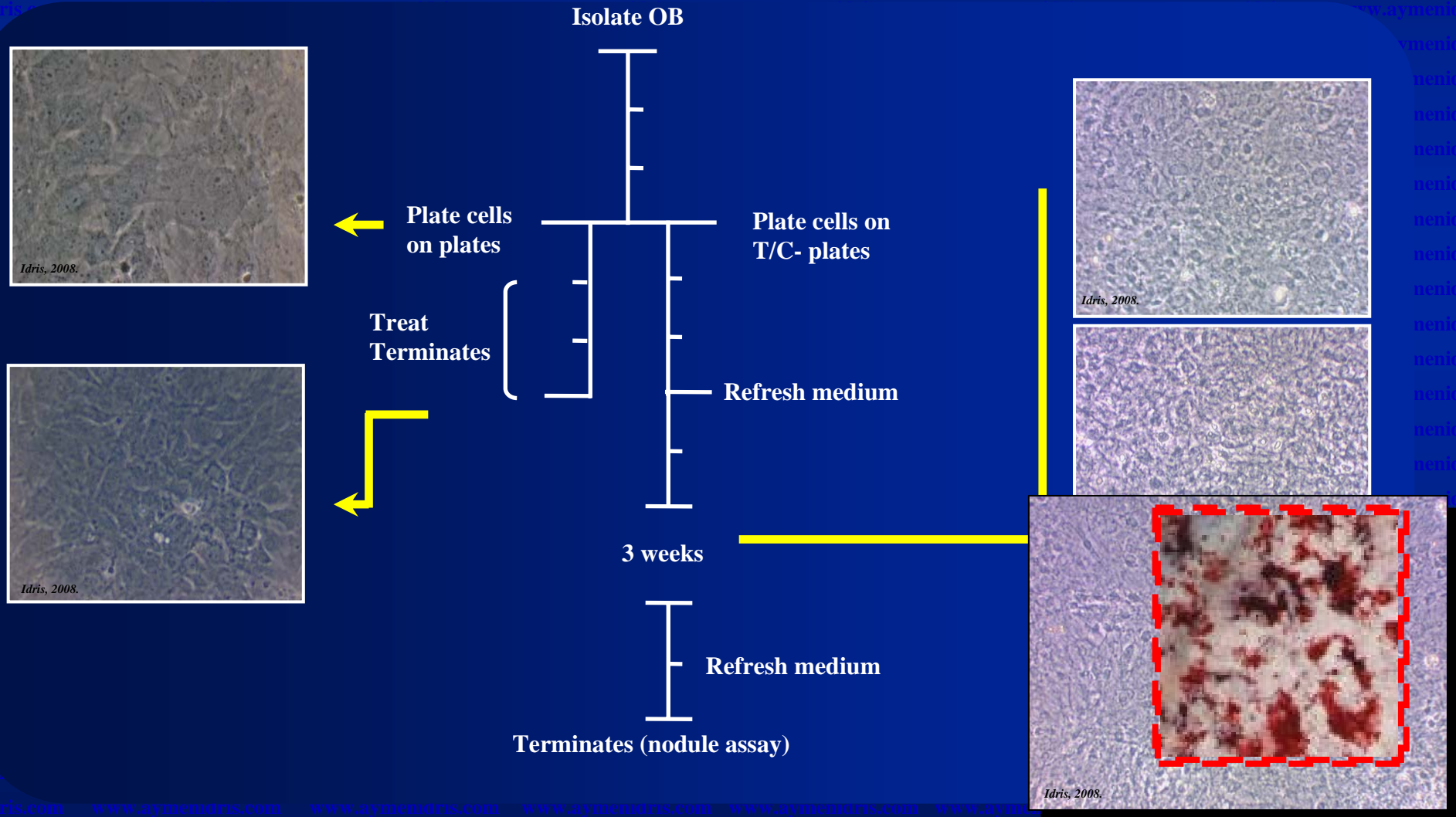
Methods for generating osteoblasts *in vitro*

Osteoblast cultures – early proliferation

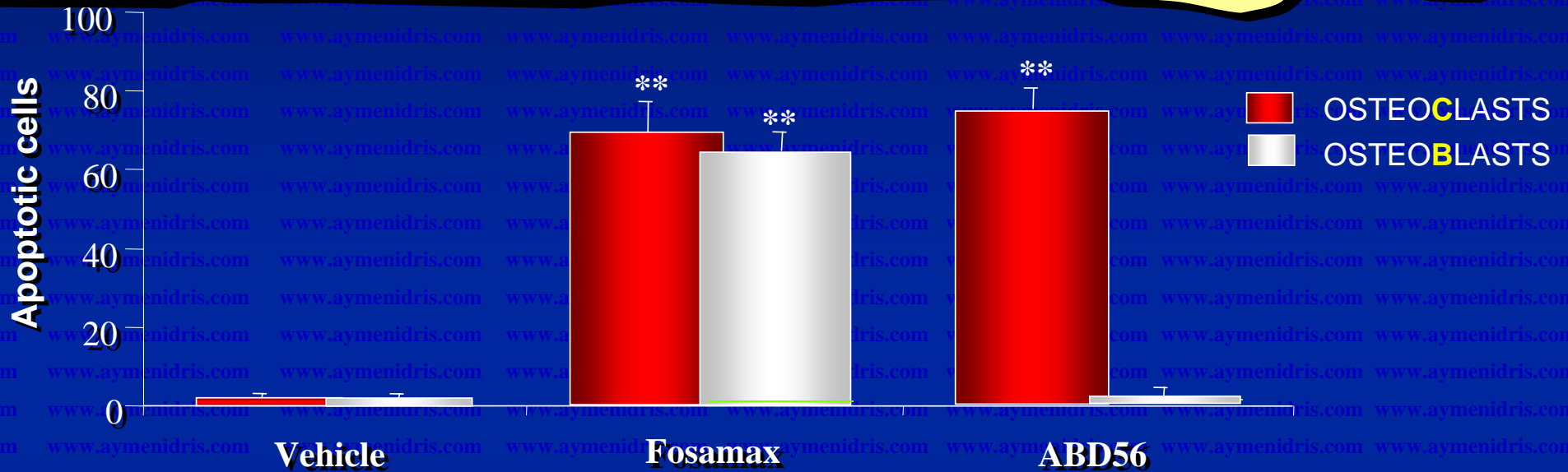


Methods for generating osteoblasts *in vitro*

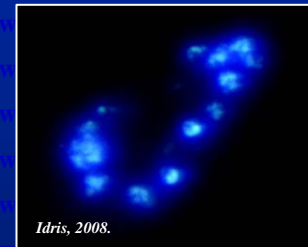
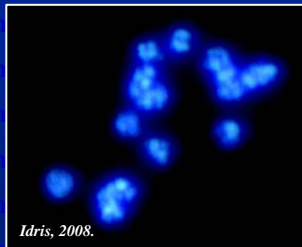
Osteoblast cultures – Bone nodule formation



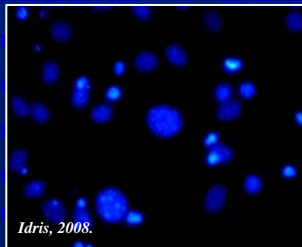
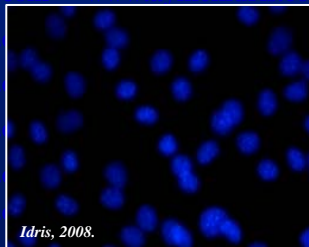
The novel anti-resorptive ABD56 induces osteoclast apoptosis while sparing osteoblasts *in vitro*



OSTEOCLASTS

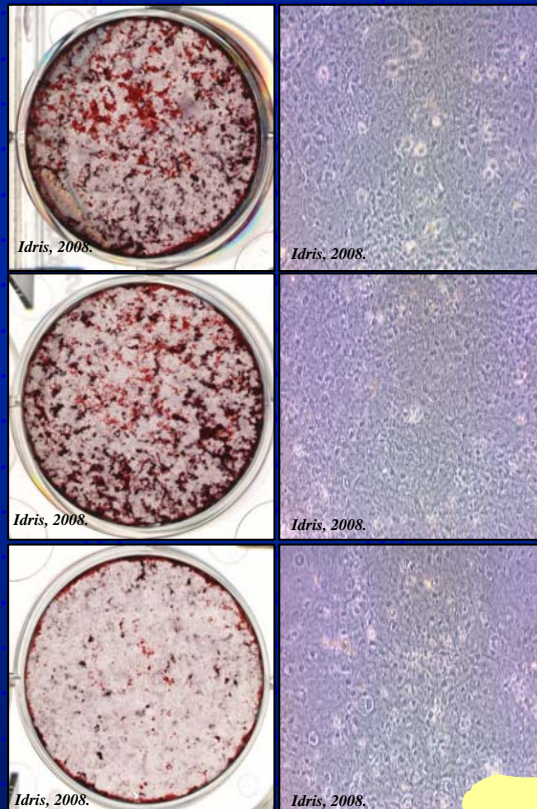


OSTEOBLASTS

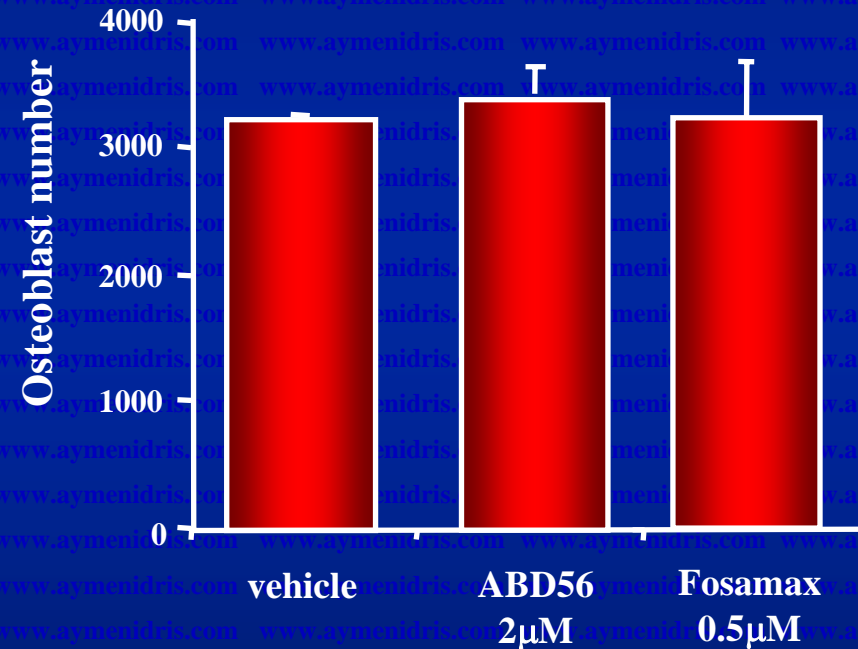


The novel anti-resorptive ABD56 does *not* inhibit bone nodule formation in osteoblast cultures

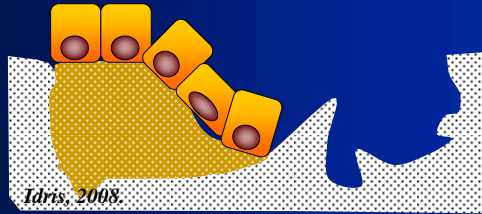
Osteoblast function



Osteoblast viability



Note – the bisphosphonate Fosamax inhibits osteoblast function



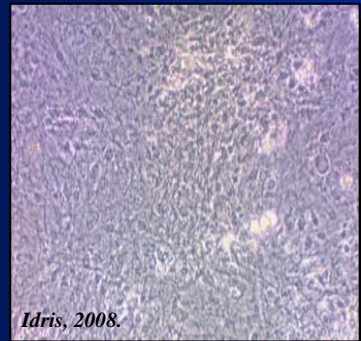
Idris, 2008.

*Functioning
osteoblast*



Idris, 2008.

*Early
osteoblast*



Idris, 2008.

*Mature
osteoblast*



Idris, 2008.

*Functioning osteoblast
Bone Nodule*

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aymen.idris@ed.ac.uk or www.aymenidris.com