



# Static vs. dynamic *ex vivo* evaluation of absorbable metallic scaffolds

April 10

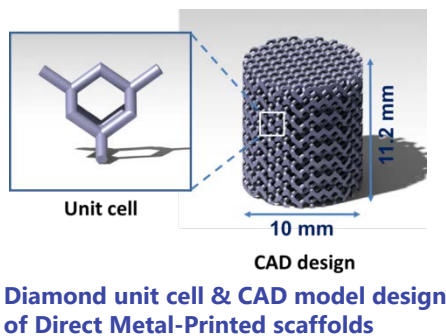
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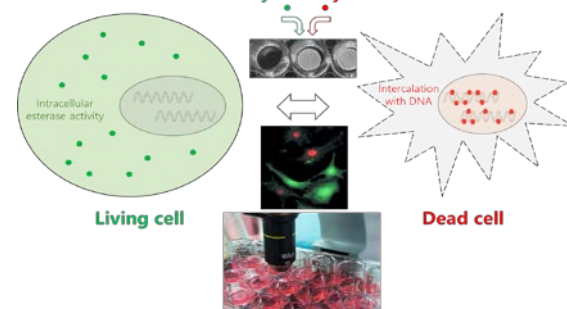
## Introduction

Absorbable<sup>1</sup> (i.e., biodegradable) metallic implants are popular for Orthopedic applications<sup>2,3</sup>. *In vivo*, interstitial fluid flow ensures waste product removal and potentially improves cytocompatibility of biomaterials<sup>4</sup>. During static *in vitro* cultures, accumulation of corrosion products may artificially increase cytotoxicity of magnesium (WE43) and pure iron (Fe)<sup>5,6</sup>.

## Methods

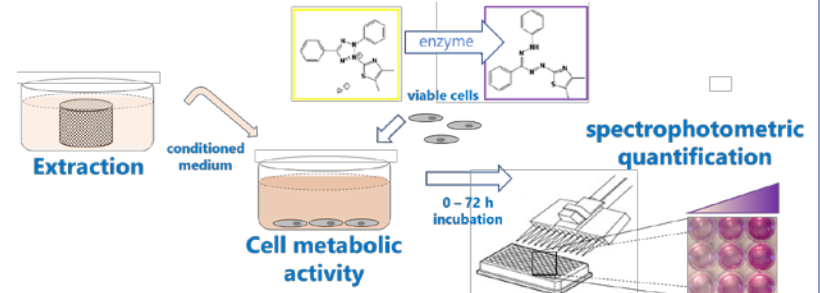


### (a) direct Live/dead



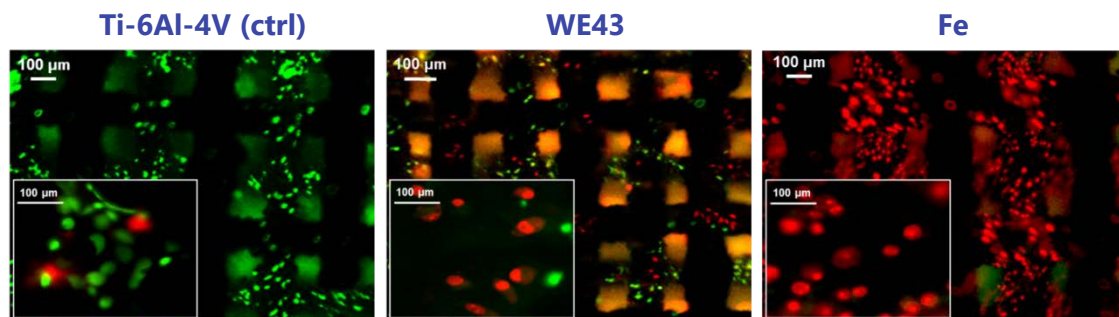
### Determination of cytotoxicity

### (b) indirect MTS assay

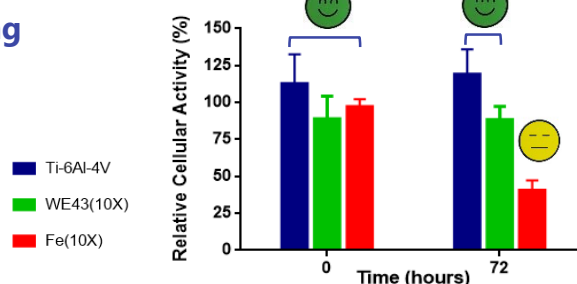


## Results

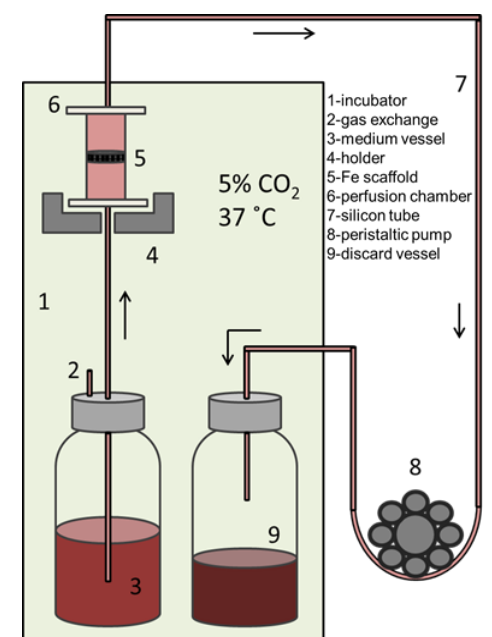
### (a) Direct static cytotoxicity testing (MG-63 cells, 24h)



### (b) Indirect static cytotoxicity testing ISO 10993 mod. MG-63 cells, 72h



### (c) Dynamic bioreactor for cytotoxicity testing



## Conclusions

While testing absorbable biomaterials according to ISO 10993 requires modifications in static culture, flow-through bioreactors hold a lot of potential to improve the quality of *in vitro* biocompatibility testing.