

IFEA grants: reviewer ranking for years 2010/11 and 2011/2012

Anonymised summary

	1	2	3	4	5	
Stephen Kwang	8/10	7/10	2 nd place	2 nd place	2 nd place	
Rada Haddadin	6/10	8.5/10	1 st place	1 st place	1 st place	
Annie Shrestha	9/10	7/10	very good	Supports	Good	

2010/2011

Stephen Kwang: Bacterial penetration of dentinal tubules in a root-filled tooth model: a confocal microscopy and SEM study

Rada Haddadin: 1) Influence of simulated mastication on fracture susceptibility of endodontically treated teeth. 2) Influence of access cavity design on fracture susceptibility of endodontically treated teeth.

2011/2012

Annie Shrestha : Photo-activated polycationic bioactive nanoparticles to inactivate bacterial endotoxins in infected dentin

Reviews:

1:

IFEA 2010:

I have the following comments about these 2010 submissions.

1. Bacterial penetration of dentinal tubules in a root-filled tooth model: a confocal microscopy and SEM study.
 - Well written
 - Research objective to understand recontamination of root canals is worthy and important
 - Investigators are very credible; methods reasonable.
 - M&M do not describe types of teeth. I would assume single rooted. Important because multirooted may recontaminate differently
 - Budget seems arbitrary and somewhat inflated
2. Influence of simulated mastication on fracture susceptibility of endodontically treated teeth. Influence of access cavity design on fracture susceptibility of endodontically treated teeth.
 - Again well written

- Comparing conservative access with traditional access in a mastication model is a worthy aim. If the study defaults to a static stress test with the Instron, the study is less compelling but still important. It is overall important to understand how the access opening contributes to structural weakness.
- Again, the investigators are credible, methods and controls good
- There is absolutely no description of how a “straight-line access” differs from a traditional access.
- Budget also seems inflated based on retail pricing for instruments and materials

Markus, I would rank the Bacterial penetration study (8/10) ahead of the Fracture study (6/10) on a 10 point scale.

IFEA 2011

1. Photo-activated polycationic bioactive nanoparticles to inactivate bacterial endotoxins in infected dentin

- Impressive and important investigation in phototherapeutics
- Both principals are extremely well qualified and Dr. Shrestha is well published for a young researcher.
- Multifunctional nanoparticles are increasingly important in disinfection investigations using PDT
- The experiments are designed to maximize data and understanding.
- The budget is credible

Markus, I would rank the nanoparticle study (9/10) on a 10 point scale.

2:

IFEA 2010

Study 1:

Bacterial penetration of dentinal tubules in a root-filled tooth model: a confocal microscopy and SEM study

Rank: 7

Comments:

The study touches in a good point albeit no significant innovation is present. The proposal is overall not straight and a bit confused. This point should be better worked.

The authors should also include these 2 studies in the review as they are most pertinent to subject matter:

1. Potential systematic error in laboratory experiments on microbial leakage through filled root canals: an experimental study. Rechenberg DK, Thurnheer T, Zehnder M. Int Endod J. 2011 Sep;44(9):827-35.

2. Potential systematic error in laboratory experiments on microbial leakage through filled root canals: review of published articles.

Rechenberg DK, De-Deus G, Zehnder M. Int Endod J. 2011

Mar;44(3):183-94

Study 2:

Influence of access cavity design on fracture susceptibility of endodontically treated teeth

Rank: 8.5

Comments:

The study touches in a very pertinent point and, at the same time it carries out a good dose of novelty in the topic.

The proposal is straight and well described. The employment of a pilot is smart and appropriate.

I just to do not agree with the experimental model chosen - in vitro randomised controlled trial. IMO, pair-wise comparison is more appropriate and surely it will increase the statistical power and reduce the number of specimens.

In the proposed design, the use of sixty-two teeth is suggested to randomly assign 3 experimental groups; however, no power statistics is described to support how the authors achieved this number. Consider to use a split mouth design and pair-wise approach. In this way, several uncontrolled variable will better controlled and the effect will be more patent. The aid of statistician will be necessary in that part and surely will improve the study design.

IFEA 2011

Study 1:

Photo-activated polycationic bioactive nanoparticles to inactivate bacterial endotoxins in infected dentin

Rank: 7

Comments:

The study is important and the method sounds reliable.

However, the Introduction is not so good; too long and pointless in some parts.

The MM also needs to be clearer; overall it is a bit confused and too long as well.

However, these are points that can be better worked and do not debunk the proposal of the study.

3:

IFEA 2010:

I have read the three applications you sent me for the IFEA annual grant. Please find below my comments.

The two from Australia (2010 applications) are interesting. One is about bacterial penetration and confocal laser microscopy analysis and one is about tooth root canal treated tooth resistance.

The subject of the first one (Stephen Kwang) is probably more "on the move" as research on disinfection is very active, but I am also curious about the dataset the project 2 (Rada Haddadin) could provide to the endodontic community.

Project 1: The material and methods is well presented, and I understand the team behind this project is competent enough to follow the project up to the end. The only minor remark I could make is that I cannot see any true innovation in this, and I am afraid they should provide some results already published. I know that confirmation of results is relevant to improve the knowledge, but even if this project is well described I am afraid of risk of redundancy.

Project 2: I guess there are plenty of results (controversial) on root canal treated teeth mechanical resistance, but probably very few related to the mastication resistance. Most of the results actually available are related to vertical pressure resistance, but very few about "physiological" pressure. And I guess that mastication forces are more complicated than a vertical pressure only.

My experience in this topic is very weak, than I have to believe that the team has a true experience on this.

In summary, both of the projects are scientifically relevant. Nevertheless, I would say that the topic of Project 2 is less investigated than the one of project 1, and the experimental approach is original, and could provide new data on resistance of treated teeth.

Conclusion, here is my rank:

Rank 1 - Project 2 entitled "Influence of simulated mastication on fracture susceptibility of endodontically treated teeth."

Rank 2- Project 1: Bacterial penetration of dentinal tubules in a root-filled tooth model: a confocal microscopy and SEM study

IFEA 2011:

The Photodynamic therapy is definitely a hot topic in endodontics of course, and the proposed project is very relevant.

The background of the applicant on the subject is definitely appropriate to conduct this project, and the supervisor is, as you know, one of the leaders in the world.

The material and methods is clear and well designed, probably used as a routine by this team, so no risk at all.

In conclusion, I would highly approve this application for the 2011/2012 IFEA annual research grant.

4:

IFEA 2010:

Rank 1: Rada Haddadin; PhD study

This study plans to look at the fracture resistance of mandibular molar teeth after endodontic treatment with an emphasis on endodontic access cavity design. The material and methods are relatively brief with some omitted information e.g. details on how access cavity shape and size will be standardized and I am not convinced that the sample size will be large enough to determine statistical significance. Other concerns relate to the point of loading by the Instron machine on the occlusal surface (which will likely be on the access cavity amalgam restoration) rather than on cuspal incline planes, and the statistical analysis assumes a normal distribution.

The materials/equipment appears to be accurate.

The project is PhD based though I assume, due to the scope and depth of the project, that this particular study is one part of the PhD.

Results from a well-conducted study in this area of tooth mechanics will be of interest to clinicians and researchers.

Rank 2: Stephen Kwang; DCLinDent study

This study plans to look at bacterial invasion of radicular dentinal tubules after simulated coronal microleakage. The material and methods are standard in vitro tests. The premise of the research is that bacteria may be able to penetrate the radicular dentine of endodontically treated roots in a coronal to apical direction via communications between dentinal tubules. Live/Dead stain and CLSM, and SEM will be employed to determine this. The methodology to determine invasion is sparse. I'm not sure that the tests will be able to validate the aim of the study but they will reveal bacteria within dentinal tubules.

The materials/equipment appears to be accurate.

The project is consistent with a DCLinDent.

IFEA 2011:

Annie Shrestha; PhD study

This study will investigate photo-activation of specific nanoparticles in order to inactivate bacterial endotoxins. The direction of the research is well aimed at striving for techniques to enhance "anti-microbial" treatment particularly as it relates to regenerative endodontics. The material and methods are detailed and represent the quality and quantity required for a PhD.

The materials/equipment appear to be accurate.

I believe the project achieves the standard for funding.

5:

IFEA 2010:

Attached please the two protocols with my comments annotated there. I am more keen on the one looking at the effect of simulated mastication. It has the potential of bridging the knowledge (and

practice) between endodontics and prosthodontics. My comment is that there are a number of trivial items that can/should be the usual provision by a dental institute. I will leave that policy of (the extent of) support to you and the committee.

As for the other study using Live/Dead staining and CLSM, I think it is a half-baked proposal with some uncertainties. First relates to the site of examination that is limited to buccal/lingual aspect of the root (if it does split in the middle). Second and, perhaps, more importantly is related to leakage that may preferentially go through the root filling-canal wall interface. A negative result may in fact be a false-negative.

IFEA 2011:

This one on nano-particles has good potential.

Vancouver, April 16th, 2012 Markus Haapasalo

A handwritten signature in cursive script, reading "Markus Haapasalo". The signature is written in dark ink and is positioned below the typed name.