



MSCA INDIVIDUAL FELLOWSHIP

[2021-2023]



University of
St Andrews

NEURONEST:

Nest building in birds: cognitive, neural and molecular basis of an overlooked behaviour

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What was the project about?

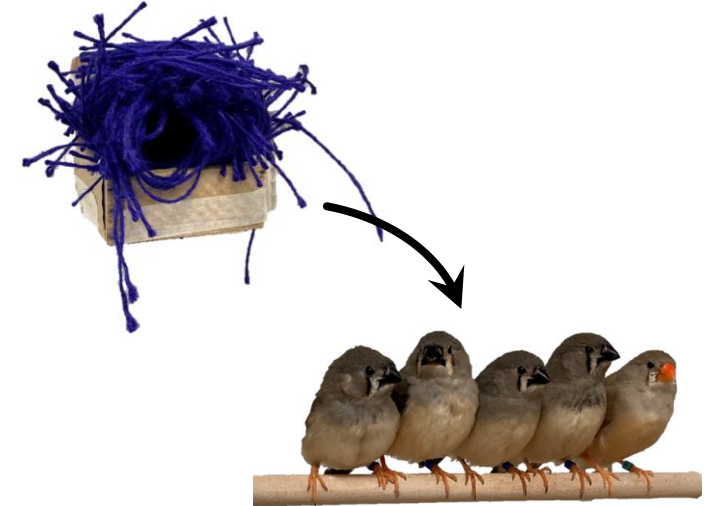
2-year research program



Part 1

Does the cerebellum play a role in the cognitive and/or motoric components of nest building?

Building on previous findings from Healy Lab:
Hall et al. (2014,2015), Edwards et al. (2020)

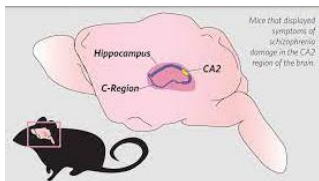


Part 2

Do sex hormones influence adult nest building?
(Q2A) If so, through which mechanism(s)? (Q2B)

General lack of data on the topic

How does the story start?



2014



2010 – Master student
[Neuroethology – cuttlefish]

Visual lateralization

Masters'
Supervisor



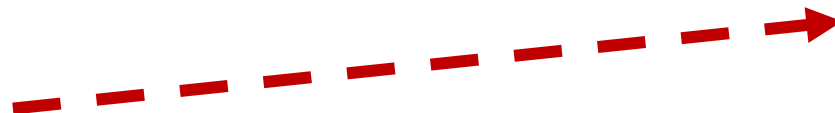
90's - [...]
**Spatial learning & memory in food
storing birds and hummingbirds**

2011 – 2014 PhD
[Neuroethology – mice]
Molecular correlates of
spatial learning

Postdoc
2007

Mid 2000's - [...]
Nest building by birds

2014:



2010's - [...]
Neuronal correlates of avian nest
building

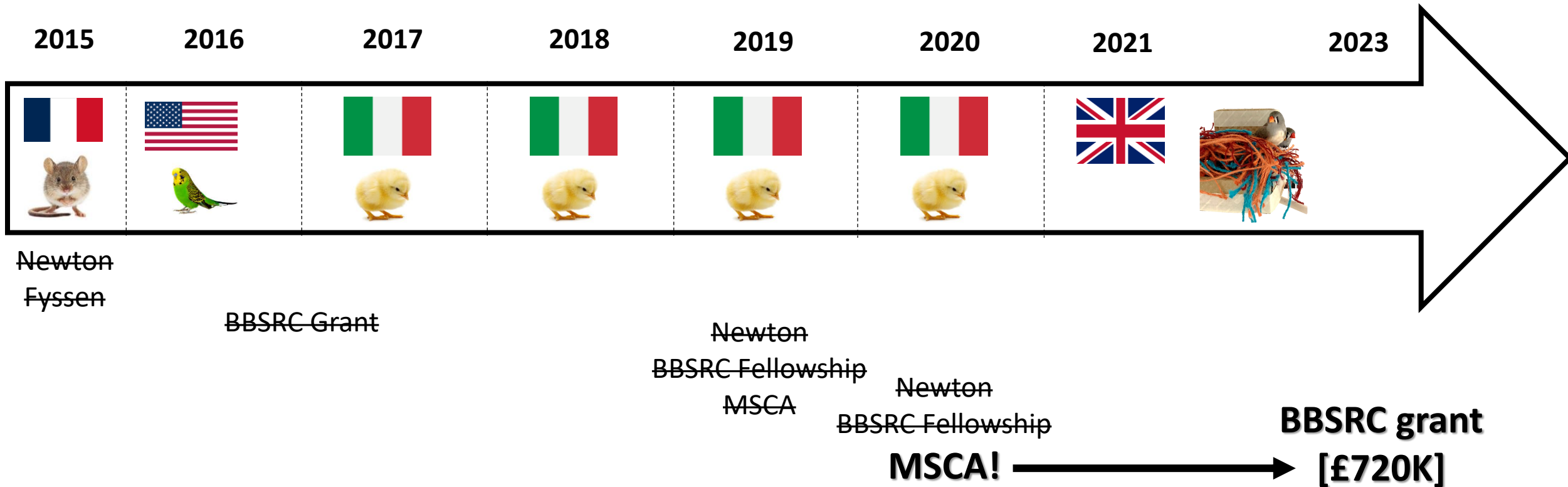
Simone Meddle



Advice #1: Don't give up [too easily]!



2014-2015: We've got an amazing project!



Advice #1: Don't give up [too easily]!

If you get feedback(s), use them to improve your next application(s).

- Your reviewers might [or might not] change, but (especially re-occurring) comments will have to be addressed.
- You've already done some of the hard work preparing the first application, use feedbacks to make the new one **better, clearer, more impactful.**

BEWARE!

As from 2022, MSCA postdoc resubmission restrictions apply for applications that received a score below 70% the previous year.

Advice #2: Plan ahead

Don't leave it to the week/days before the deadline!

Because (among other things):

- **(Good) writing takes times!** And a lot of edits!

- **MSCA needs particular formatting**, even if you already have a particular/similar project already prepared. **More than you would think, really!**

- Universities require applications to be submitted/validated ahead of times
 - Everybody is going to upload it over the last day(s)... **server failure!**

The 'MSCA Holy Trinity'



The Fellow

Why this Fellow, this PI and this Institution?

Adequation between the three is going to be assessed

What does one bring to the other(s)?

Exchange of knowledge, Support, Work environment...

How running THIS project with this PI at this Institution will develop the Fellow, what the Fellow will bring to the Host, etc...

**The
Project**



University of
St Andrews



Host

[aka, the PI]

**Host
University**



Secondment = another 'Holy
Trinity'

Do not forget to develop the
aforementioned question(s)
in relation to it too!

NEURONEST applications: 2019 vs 2020

2019

88.40%

[seal of excellence, but not funded]

- 1 - Excellence: 4.30 / 5 [weight 50%]
- 2 - Impact: 4.50 / 5 [weight 30%]
- 3 - Implementation: 4.60 / 5 [weight 20%]

Form information

SCORING

Scores must be in the range 0-5.

Interpretation of the score:

- 0- The proposal falls to address the criterion or cannot be assessed due to missing or incomplete information.
- 1- Poor. The criterion is inadequately addressed, or there are serious inherent weaknesses.
- 2- Fair. The proposal broadly addresses the criterion, but there are significant weaknesses.
- 3- Good. The proposal addresses the criterion well, but a number of shortcomings are present.
- 4- Very good. The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5- Excellent. The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

2020

97%

FUNDED!

- 1 - Excellence: 4.80 / 5 [weight 50%] **[+0.5]**
- 2 - Impact: 4.90 / 5 [weight 30%] **[+0.4]**
- 3 - Implementation: 4.90 / 5 [weight 50%] **[+0.3]**

Impact + Implementation = 50% weight

**Do not underestimate the importance
of these sections!**

Criterion 1 - Excellence

Criterion 1 - Excellence

Score: **4.30** (Threshold: 0/5.00 , Weight: 50.00%)

- **Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects**
- **Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host**
- **Quality of the supervision and of the integration in the team/institution**
- **Potential of the researcher to reach or re-enforce professional maturity/independence during the fellowship**

Strengths

- *The overall quality of the proposed work is very good, incorporating a credible research programme.*

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 Associated with document Ref. Ares(2020)291736 - 16/01/2020

- *The proposal is novel and highly multidisciplinary, including a very good combination of behavioural, neurobiological, molecular and physiological approaches, and is anticipated to produce robust and meaningful results.*
- *The overall quality of the planned training programme is very good, allowing the researcher to receive qualified training-through-research in several essential advanced techniques not mastered yet.*
- *The supervisor demonstrates an outstanding scientific track record and is very experienced in overseeing researchers that have been shown to become highly successful in reaching professional maturity.*
- *The arrangements planned to smoothly integrate the researcher into the host institution and research group are very convincing.*
- *The researcher displays a qualified scientific track record and has acquired several research skills relevant in the field of neuroethology. The proposed work is a logical continuation on that path, and is anticipated to place the researcher closer to professional maturity/independence during the action.*

Weaknesses

- *The appropriateness of the planned measurements and controls to demonstrate that observed results are due to nest-building variations, rather than social behaviour differences, is unconvincingly argued.*
- *The procedures to determine the pattern of c-fos activation are insufficiently articulated in the proposal.*
- *The transfer of knowledge from the researcher to the host institution/research group is not well substantiated and the new knowledge/skills the researcher is anticipated to offer are not sufficiently convincing.*
- *The experience of the secondment supervisor in overseeing/mentoring early-stage researchers is not sufficiently disclosed.*

Lack of
clarity/details?

Some changes I have made:

2019

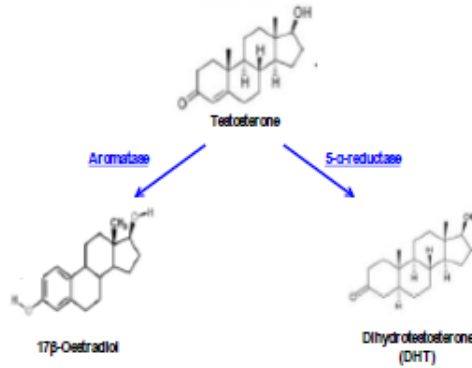
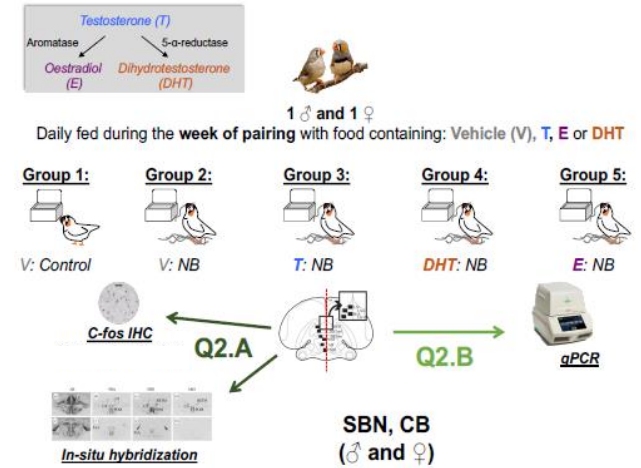


Figure related to Objective 2

2020



Figures can help you to gain clarity!

Use figures to summarize what you've just said in the text.

You want to make sure the reviewers will understand what you want to do!

They likely have to go through several whole applications. A figure presenting the key elements of the Work Package can help the reviewer keep your goals and experiments in mind.

Some changes I have made:

2019

2020

Predictions:

'I can expect'

'I will rule out'

'will be performed'

'I expect'

'I do not expect'

Use 'I' +++

This feels odd at the beginning, but this is YOUR Individual Fellowship

Make sure your predictions are clear

Based on your knowledge and the literature. You might end up being wrong [that's science] but do make clear predictions: no 'can'

Some changes I have made:

- The transfer of knowledge from the researcher to the host institution/research group is not well substantiated and the new knowledge/skills the researcher is anticipated to offer are not sufficiently convincing.

2020

Following the example of a friend of mine (MSCA Fellow in 2019), I've added this section in my CV:

RELEVANT SKILLS

Behavioural assays and observations in animals (including birds) – Design of experiments to study laterality, functional recovery, spatial learning, fear conditioning, vocal learning, social behaviours, visual threat detection - *Throughout the BSc, MSc, PhD and post-doctoral research.*

Molecular Biology techniques - In-situ hybridisation, RNA-Seq, PCR, western-blots, zymography, protein and RNA extraction, subcloning for probe generation - *Throughout the MSc, PhD and post-doctoral research.*

Immunohistochemistry (IHC) and neuroanatomy – Use of fluorescent and colorimetric IHC techniques to study protein expression (including c-Fos) in the mouse's and chick's brain. *Throughout PhD and post-doctoral research*

Image Analysis and cell count – Counting of AR and c-Fos positive cells in the avian brain with Zen Pro and Image J. *Throughout post-doctoral research*

Advice #3: Try to read [multiple] successful MSCA application(s)

This will help you to understand: **what goes into which section, what they all have in common**, etc.

Bonus points if: this is from the **same institution/department** [help with talking about the Host Institution] **and/or from the same 'EU Scientific Initiative'** [currently 'Horizon Europe'; more likely to look like yours]

Score: **4.80** (Threshold: 0/5.00 , Weight: 50.00%)

- **Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects**
- **Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host**
- **Quality of the supervision and of the integration in the team/institution**
- **Potential of the researcher to reach or re-enforce professional maturity/independence during the fellowship**

Strengths

- *The project addresses the very timely issue of the neurophysiological basis of physical cognition in vertebrates with an interdisciplinary focus*

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 Associated with document Ref. Ares(2021)907006 - 02/02/2021

on nestbuilding behaviour, tool use and the role of the cerebellum and hormones in the brain. It tackles fundamental knowledge gaps. A succinct and coherent description of state-of-the-art is provided.

- *Specific questions and hypothesis are laid out very clearly and excellently justified. Controls are very well chosen to distinguish between cognitive and motor responses. The experimental layout is underpinned by a creative and innovative approach in the study of brain and behaviour.*

- *The work builds on the advances and tractability of a leading model species in avian neurobiology and endocrinology.*

- *The project combines the strength of well-understood behaviours with modern methods of molecular neuroscience, histology and endocrinology.*

- *The gender dimension is sufficiently addressed. Both sexes will be studied given their sexual dimorphisms.*

- *The quality of the training at the host institution is excellent and clearly outlined.*

- *Both hosts are experts in the complementary research fields that are brought together in this project.*

- *The two-way knowledge transfer between researcher and host is very convincingly described given their complementary and very compatible skills and specializations.*

- *Both hosts have an outstanding track record of publications, funding and international collaborations and recognition. They are very experienced in supervising and mentoring early-career researchers, including the host's previous supervision of postdoctoral researchers with prestigious personal fellowships.*

- *The quality of the research group and the research-intensive environment at the hosting institutions is excellent offering many opportunities to interact with other peers, other experts, students and researchers and to participate in further training to support the wider development of the researcher's career-building skills.*

- *The integration of the researcher into the host institutions and research teams is clearly outlined.*

- *The researcher has an excellent track record relative to stage and opportunity, which includes international experience, excellent publications in a range of topics, independent collaborations, teaching, funding acquisition.*

- *The project appropriately builds on the existing skills and experience of the researcher combined with the acquisition of new skills and experiences in project management and techniques. There is an excellent potential for enhancing the researcher's professional maturity.*

Weaknesses

- *Training during the secondment is not outlined in sufficient detail.*

Criterion 2 - Impact

Criterion 2 - Impact

Score: 4.50 (Threshold: 0/5.00 , Weight: 30.00%)

- **Enhancing the future career prospects of the researcher after the fellowship**
- **Quality of the proposed measures to exploit and disseminate the project results**
- **Quality of the proposed measures to communicate the project activities to different target audiences**

- *The planned training in scientific and transferable skills will considerably strengthen the researcher's multidisciplinary research profile and leadership capacity, making meaningful contributions to substantially improve career prospects and employability after the action.*
- *Qualified measures are proposed to disseminate the project results to the scientific community, including publications in top peer-reviewed journals and participation in international scientific events.*
- *Overall high-quality measures to communicate the research activities to different target audiences are foreseen, including diverse venues and a good use of social media.*
- *Very well-thought-out plans for outreach activities directed at non-specialist target audiences are convincingly presented, including a citizen science project, workshops with children, and other public engagement events, e.g. science festivals.*

Weaknesses

- *The researcher's minimal goal for first-authorship publications in top peer-reviewed journals is insufficiently ambitious.*

(2)

Key is 3...

Criterion 2 - Impact

Score: 4.90 (Threshold: 0/5.00 , Weight: 30.00%)

- **Enhancing the future career prospects of the researcher after the fellowship**
- **Quality of the proposed measures to exploit and disseminate the project results**
- **Quality of the proposed measures to communicate the project activities to different target audiences**

Strengths

- *The proposal very convincingly outlines how the acquired new knowledge, interdisciplinary collaborations and skills will significantly strengthen and broaden the researcher's expertise enhancing their chances to fulfill their career ambitions of becoming an independent researcher.*
- *Added experience with the second most important model system in avian neurobiology will significantly strengthen the researcher's competitiveness in future projects and funding acquisition.*
- *The project will enable the researcher to develop new collaborative networks and contacts given the host's excellent international standing and leadership in the field.*
- *Plans for dissemination of the results to academic audiences are convincing and very appropriate.*
- *The plan for outreach activities is creative and innovative. The planned activities to target audiences outside academia are very good, including the use of social and main stream media. The citizen science project makes it possible to directly measure the success of the engagement. The school workshop is convincing and likely to deliver a strong educational impact.*

Weaknesses

- *Support at the host institution to assist the researcher in the exploration of potential exploitation of the blue-skies research outcomes is not described in sufficient detail.*

Criterion 2 - Implementation

Criterion 3 - Implementation

Score: 4.60 (Threshold: 0/5.00 , Weight: 20.00%)

- **Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources**
- **Appropriateness of the management structure and procedures, including risk management**
- **Appropriateness of the institutional environment (infrastructure)**

Strengths

- *The proposed work plan is very well designed and coherently aligned to effectively pursue the objectives of the proposal.*
- *The overall allocation of human resources to the work plan is appropriate to implement the foreseen activities.*
- *The procedures for project-progress monitoring are noteworthy, including weekly researcher-supervisor meetings and suitably regular group meetings.*
- *The appropriateness of the management structure and general procedures, at institutional and research group level, is convincingly shown.*
- *The host provides an outstanding institutional environment, including state-of-the-art infrastructure, facilities, and equipment for successfully implementing the proposed work.*
- *The infrastructure at the secondment institution is of remarkably high quality to provide for the training-through-researcher requirements of the researcher.*

Weaknesses

- *The risk assessment and mitigation plan presents shortcomings. Some administrative risks are inadequately addressed, e.g. regarding possible delays in approval of the Home Office License training course and it is insufficiently clear what precisely the contingency plan is in case the hormonal treatment fails to induce observable differences in nest-building (which would hinder the completion of the second part of the project).*

2019

Some changes I have made:

Risks that might endanger reaching project objectives: The proposed project is ambitious and involves a large range of techniques to perform in a short time. However, since it contains two related but independent components, failure to reach one milestone will not endanger other aspects of the project. I am already familiar with some of the techniques required, Healy and Meddle possess the complementary skills needed for its completion (see Section 1.2), and most of the procedures have already been successfully implemented in their labs, therefore the methodological risks are rather limited. One major risk would be administration of hormones to adults not having observable effect on nest building. If that was to be the case, administration to juveniles would be implemented instead, given data in the literature that show their effectiveness. As described above, risk may also arise from the short-duration of the action. To mitigate this risk, I will start from abroad all the steps that can be done before my arrival (Fig. 4: M1.1, M2.1, M4.1). Although I plan to collect the majority of the data, a number of students usually work as volunteers in Healy's and Meddle's labs and will get involved on subparts of the project if needed.

Small section partially because of space limitation...

2020

- Dose added in the 'project' part in 2020 (not in 2019)
- References

➔ Give concrete and convincing evidences that it won't fail and if it does that you have a concrete backup plans.

Risks that might endanger reaching project objectives: The proposed project is ambitious. However, since it contains two related but independent components, failure to reach one milestone will not endanger other aspects of the project. I am already familiar with most of the neurobiology techniques required, Healy and Meddle possess the complementary skills needed for its completion (see Sections 1.2 and 4) therefore the methodological risks are rather limited. A major risk would be administration of hormones to adults not having observable effect on NB, although those doses have been shown to modulate other cognitive abilities⁴⁶. If that was to be the case, administration to juveniles by gavage would be implemented instead, since a previous study has shown its effectiveness to modulate NB later on through developmental change²¹. As described above, risks may also arise from the short duration of the action. To mitigate this risk, I will start from abroad the steps that can be done before my arrival (Fig. 3). Since Healy has previously obtained Home Office Project Licences, including one to study the neurobiology of NB, and since I obtained the equivalent of both a Home Office Project/Personal Licences in France and Italy, no delay is expected for the acquisition of such licences. Although I plan to collect the majority of the data, a number of students usually work as volunteers in Healy's and Meddle's labs and could also get involved if

Advice #4: Need to find the right balance between saving space and not omitting important details

Criterion 3 - Implementation

Score: 4.90 (Threshold: 0/5.00 , Weight: 20.00%)

- **Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources**
- **Appropriateness of the management structure and procedures, including risk management**
- **Appropriateness of the institutional environment (infrastructure)**

Strengths

- *The work plan is very thoroughly and comprehensively outlined. The activities to be undertaken in the 6 work-packages are very clearly explained. Milestones and deliverables are very clearly defined. Dedicated time for each work package is very well justified and very credible.*
- *The project is excellently resourced given the existing continuously breeding population of zebra finches at the host institution.*
- *A contingency planning, including risk assessment, alternative strategies and mitigation plans is discussed in very good detail.*
- *Appropriate structures to monitor the progress and mentoring are very clearly described.*
- *The infrastructures, logistics and facilities at both host institutions are excellent, and therefore, very suitable for the successful implementation of the action. Commitment to actively support the research and training is very evident.*

Weaknesses

- *No major weakness.*

Summary of the most useful tips

- **(Good) writing takes time**
- **Get examples from previously successful MSCA fellows**
- **Get as many comments as you can**
- **Build on previous reviews from previous applications**
- **Think careful of many pages you should dedicated to each section/subsection** [MSCA does not specify how you should use your 10 pages... which is great as you have flexibility, but this can be a bit destabilizing at first]
- Some Universities [such as St Andrews] have a **specific team in charge of EU-funded projects**. Don't hesitate to contact them, they might be able to:
 - Write about the Home Institution, and give you practical details re is functioning to add to your application
 - Provide feedback

Concluding remarks:

‘whenever you reapply for funding, you’re rolling the dices again’

[Marie’s former postdoc advisor]



There is, to some extent, things **beyond your control**: who will review your application?

Example of the same fellowship application (BBSRC) reviewed by 5 different reviewers the same year:

Overall assessment of the applicant:

- + **Exceptional (1)**
- **Excellent (3)**
- Very good (0)
- **Good (1)**
- Not competitive (0)
- • Unfundable(0)

‘Dr. Hebert [...] is on track to be an exceptional independent researcher in a field that she will help to define. **Her publication record is very strong [...].**’

‘Her publication record is reasonable, but not stellar [...].’

Concluding remarks:

If you are successful, the first email you are going to receive won't be
'Congratulations, your application has been successful!' ...



...It will rather look like that:



Your EU project 101024039 - NEURONEST; request for additional data to prepare your Grant Agreement Boîte de réception x .St Andrews x



European Commission <EC-NO-REPLY-GRANT-MANAGEMENT@nomail.ec.europa.eu>
À Lorraine, Ann, Sue, moi ▾

lun. 8 févr. 2021 07:37 ☆ 😊 ↶ ⋮

Traduire en français ×

Europa / Funding & Tenders Portal notification

Dear Participant,

A grant data preparation session has been opened for the above project. Please review and enter the grant data for your organisation. The Coordinator can enter grant data and submit on behalf of the Consortium.

Please log on to the Funding & Tenders Portal > My Project(s) (<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/myarea/projects>) and click on Actions > Manage Project to view an important request to provide additional data required to prepare your Grant Agreement.

Regards,
Grant Management Services

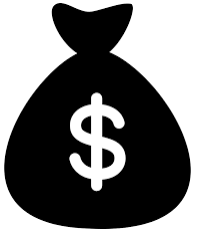
Please do not reply to this message

This message has been automatically generated by the Grant Management Services of the European Commission.

Final warnings:



Marie Curie Fellowships come with:



✓ **A great salary, mobility and family allowance, ect...**

This is great, but you are on the separate pay scale...

If you apply for more funding in the future (to stay where you are), make sure you ask for the right grade!

✗ **A fixed ‘Research, training and networking’ budget [€ 19,200]**

Keep this is mind!

Make sure not to plan too expensive experiment or that your Host Lab/Institution can cover some of the costs of your experiments.

Otherwise you might not be able to do your proposed work!



MSCA INDIVIDUAL FELLOWSHIP

[2021-2023]



University of
St Andrews

NEURONEST:

Nest building in birds: cognitive, neural and molecular basis of an overlooked behaviour

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