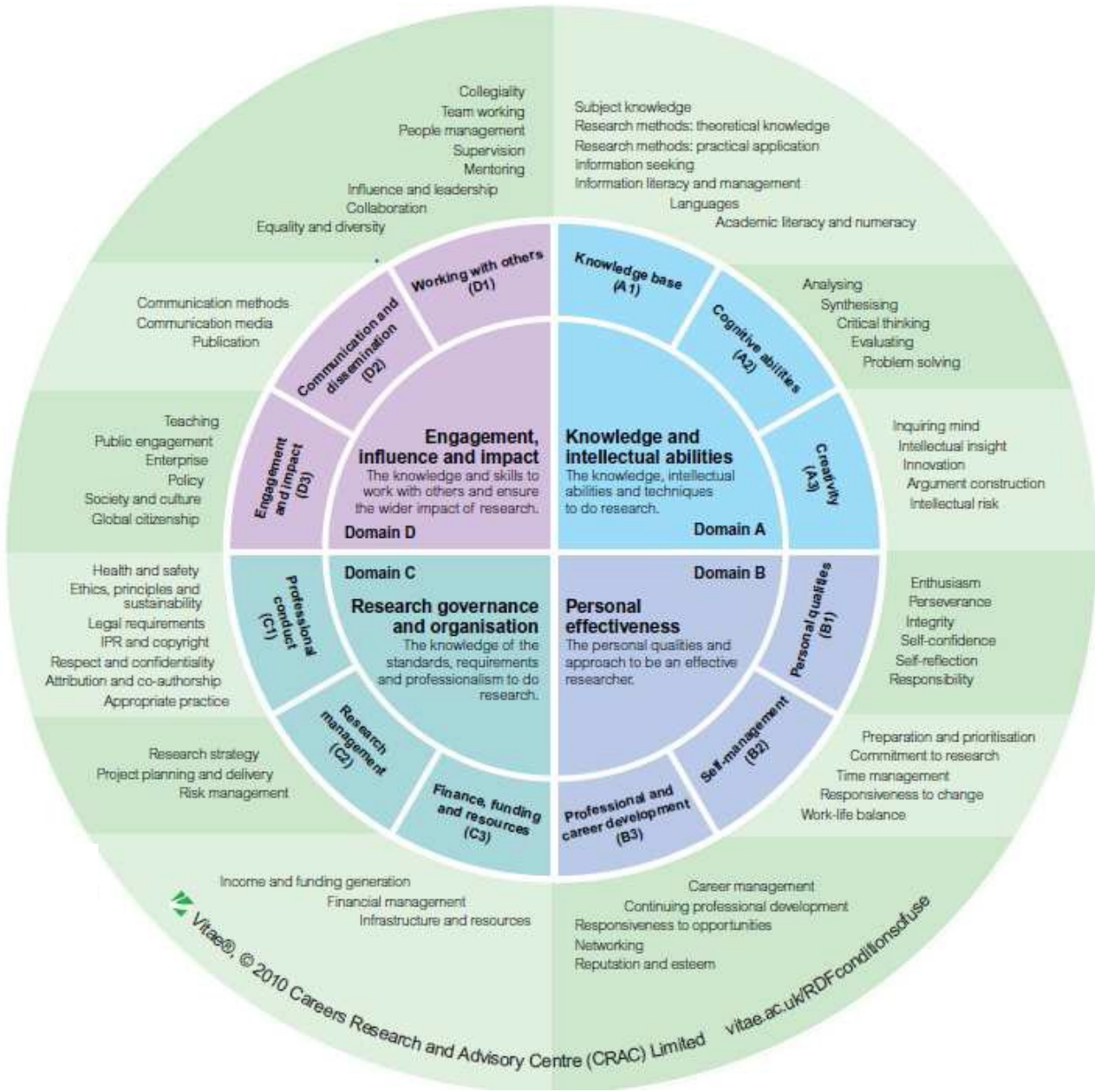# MEICOM

ITNA TRAINING NEEDS ANALYSIS

Successful and timely completion of your research degree will depend on developing a mixture of subject-specific skills, intellectual skills, such as critical thinking, and more generic skills, like communication and enterprise. Many of these skills will also be important in your future life, whatever career or life choices you make.

The ITNA Training Needs Analysis form uses Vitae's Researcher Development Framework (RDF) to help you think about your current skills, pinpoint gaps in your knowledge, and identify areas for future development. The RDF articulates the knowledge, behaviours and attitudes of researchers, from postgraduates to establish academic leaders and is endorsed by Research Councils UK.

There are four sections to the form, based on the RDF domains (below or for more details, including suggested skills levels see:

https://www.vitae.ac.uk/vitae-publications/rdf-related/researcher-development-framework-rdf-vitae.pdf/view)

Use the sections to outline your goals for this year in each area. At the end of the form is a summary sheet to outline your specific plans.

Collegiality
Team working
People management
Supervision
Mentoring
Influence and leadership
Collaboration
Equality and diversity

Subject knowledge
Research methods: theoretical knowledge
Research methods: practical application
Information seeking
Information literacy and management
Languages
Academic literacy and numeracy

Communication methods
Communication media
Publication

Analysing
Synthesising
Critical thinking
Evaluating
Problem solving

Teaching
Public engagement
Enterprise
Policy
Society and culture
Global citizenship

Inquiring mind
Intellectual insight
Innovation
Argument construction
Intellectual risk

Health and safety
Ethics, principles and sustainability
Legal requirements
IPR and copyright
Respect and confidentiality
Attribution and co-authorship
Appropriate practice

Enthusiasm
Perseverance
Integrity
Self-confidence
Self-reflection
Responsibility

Research strategy
Project planning and delivery
Risk management

Preparation and prioritisation
Commitment to research
Time management
Responsiveness to change
Work-life balance

Income and funding generation
Financial management
Infrastructure and resources

Career management
Continuing professional development
Responsiveness to opportunities
Networking
Reputation and esteem

Working with others (D1)
Knowledge base (A1)
Communication and dissemination (D2)
Cognitive abilities (A2)
Engagement and impact (D3)
Creativity (A3)
Professional conduct (C1)
Personal qualities (B1)
Research management (C2)
Self-management (B2)
Finance, funding and resources (C3)
Professional and career development (B3)

Engagement, influence and impact
The knowledge and skills to work with others and ensure the wider impact of research.
Domain D

Knowledge and intellectual abilities
The knowledge, intellectual abilities and techniques to do research.
Domain A

Domain C
Research governance and organisation
The knowledge of the standards, requirements and professionalism to do research.

Domain B
Personal effectiveness
The personal qualities and approach to be an effective researcher.

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vitae.ac.uk/RDFconditionsofuse

Domain A: Knowledge and Intellectual Abilities
The knowledge, intellectual abilities, and techniques used in research
(Knowledge Base, Cognitive Abilities, Creativity)

Based on my personal evaluation, I believe I am somewhere within phase 1 in terms of my subject knowledge, knowledge on research methods and the practical application of said methods (section A1). This is mainly because I have no prior experience in the field of meiosis, so there is a lot of background knowledge I have to catch up on to be able to relate these processes to my knowledge about the organism I am working with (oilseed rape). My understanding is increasing, but I still have a lot of studies to read, especially key studies dealing with the newest findings in the field of meiotic recombination, on which my research is based. I also need to further my understanding of plant evolution and the retention of multiple gene copies in plants. This is another major focus of my research, and should allow me to contextualise why one of the genes I am working with is present in five copies.

I am also on a mission to improve my data collection and analysis techniques, mainly in a bioinformatical context. I have already made a lot of progress in familiarising myself with bioinformatics platforms and programming languages I was previously unfamiliar with (e.g. the Linux Shell and R). However, there are still a lot of things I want and need to learn before I will be able to write and execute programs for my research purposes. My current goal is to acquire sufficient knowledge of Python to write a script to unify multiple data collection and analysis tasks I usually carry out one-by-one in the command line. I also want to be able to write effective SLURM (Simple Linux Utility for Resource Management) job scripts to make to the most of the computer cluster I have access to. Apart from online research, I also want to improve my coding skills by taking part in Linux and Python courses offered to members of my institute at neighbouring universities.

In regards to my knowledge of research methods, I think I am good at documenting my research processes; I tend to record almost everything I do on a daily basis. I am familiar with most of the techniques I am currently using, but am gradually switching to and acquiring technical skills I have no prior experience in, such as cytological analyses. I have not had the need to do any statistical analyses yet, so I cannot comment on this aspect.

I would assess my cognitive abilities (sub-domain A2) to be somewhere within phase 1. This is currently hard to assess because I need to advance further in my project before I will have to come up with solutions for unexpected research problems, deal with difficult criticism and/or design new projects to take my research into new directions.

In Sub-domain A3 ("creativity"), I would place myself in phase 1. I would like to think I am a very enquiring person, and I know for a fact that I ask a lot of questions. I am uncertain on how I stand in regards to my intellectual insight and innovation, because, again, in my opinion, the project needs to progress further before I can explore these areas. My long-term goal in this area is to advance my project to a point where I have the opportunity to make an informed decision on which direction I would like to continue in.

Domain B: Personal Effectiveness
The personal qualities and approach to be an effective researcher (Professional
and Career Development, Self-Management, Personal Qualities

In regards to sub-domain B1, I would say my enthusiasm for my project is increasing as my project advances, as is currently in phase 2, which I mainly attribute to the fact that I am acquiring and developing my bioinformatical abilities in an independent manner, and am enthusiastic about new challenges in this area. I would describe my perseverance in regards to set-backs as moderate. One of my goals is to become less critical and more resilient toward any problems I may encounter throughout my research, as a negative attitude usually just makes things worse. On a similar note, I would also like to improve my self-confidence in my research. I sometimes doubt the validity of some of my findings because I assume I may have been careless in one of the preparatory steps of an experiment, but upon double checking, it turns out I had made no mistakes after all.

For sub-domain B2, I would place myself in phase 1 for most points. My time management skills are increasing as the project progresses, and I am becoming better in setting up work schedules and deadlines for myself to insure all aspects of my research progress at a uniform rate. However, these schedules tend to pertain to laboratory work. I think planning out which studies I still need to read, and until when I should have read them, would be a great way to ensure I am up-to-date in regards to my background knowledge as well.

In sub-domain B3, I would place myself within phase 1 for most aspects. Through my past internship at a seed company, I have a general sense of which direction I would like to take my carrier in. One of my goals is to make my research appealing to both industry and academia, which in my case means balancing between the evolutionary and functional exploration of the gene retention, and the more industrially interesting creation of a hyper-recombinant crop.

Domain C: Research Governance and Organization
The knowledge of standards, requirements, and professionalism to do research (Professional
Conduct, Research Management, Finance, Funding and Resources)

Some of these categories are not directly applicable to my current state of existence as a PhD student. In area C1, the only goal I can come up with is that I need to familiarise myself more with the protocols for sorting and getting rid of chemical waste products, which is something I can do by asking the lab technicians about it when the time comes for me to deal with such products.

My goals in area C2 echo the goals I stated for the previous domains, which are to improve my project management through the creation of research plans (both short term and long term), as well as making sure that my project covers areas of academic interest (to further my P.I.'s research and that of the institute in general) as well as industrial interest (to remain employable as a researcher in industry). Again, I would place myself in phase one, which is also where I would assess myself to be at in sub-domain C3. I believe I am making good use of the resources available to me through the institute, as well as my funding. For example, thanks to my salary, I am able to afford a subscription to Adobe's Photoshop CC, which I use to make content for our network's outreach events, as well as our official website.

Domain D: Engagement, influence and impact
The knowledge and skills to work with others and ensure the wider impact of research
(Working with Others, Communication and Dissemination, Engagement and Impact)

In subdomain D1, I would place myself in phase one for most categories, as PhD students tend not to take on leadership roles, although I would say I am a fairly collaborative person and appreciate equality and diversity.

For subdomain D2, I would place myself into phase two, as I have already produced a variety of content for our network's outreach event, and extensively collaborated with my peers. My current goal is to create and cultivate a web presence for our PhD network and research in form of our official Meicom website. As stated before, I have access to Photoshop and very basic programming skills and am not afraid to use them to create a visually appealing website with interesting content to familiarise the general public with crop science. Hopefully, this website will be ready in time for our first outreach event at the end of February, but I am planning to cultivate it and update it with the newest information and engaging content throughout my PhD project.

In regards to domain D3, I am largely in phase one, as I have only attended one conference so far, and my first outreach event will take place in February. I would like to continue to take part in both conferences and outreach events throughout my project. I am also planning to use the website not only as a mere source of information on crop science, but also as a platform that the public can also contribute to (i.e. In the form of submitting artwork that we can then feature on the site etc.).

You can use this section to identify a small number of specific prioritised goals for your development year.
This should be revisited at the end of the year to assess progress.

Identified skill area for development	Planned Activity	Success criteria (i.e. how will you know you've achieved your goal)	Deadline (when do you want to achieve it by?)
A1	Reading a sufficient amount of studies to advance my knowledge base to phase 2.	Having enough evidence to be able to write a review	This will be ongoing throughout my PhD project, but I should have gathered enough information by the end of this year.
A1	Advance my bioinformatics abilities to phase 2.	Completion of all current bioinformatical analyses for my project.	Within the next few months.
D2	Create and cultivate the Meicom website.	The existence and appearance of the website.	I would like to have the website ready for the Think Tank outreach event in February, but the addition of content will be an ongoing process.

Signature (MEICOM ESR)

……………………………………………………………………….. Date……………………………………………………….

Signature (Supervisor)

……………………………………………………………………….. Date……………………………………………………….

Signature (Second or co-Supervisor)

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