

Mentoring Guide for Biotech Green Entrepreneurial initiatives

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"Green education for green Biotech Enterprise" GreenBE

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Foreword

The GreenBE Project (2021-1-RO01-KA220-HED-000032162), supported by Erasmus+, aims to develop an innovative educational framework for graduates in Biotechnology and Economics towards a Biotech Green Entrepreneurial path, capable of supporting the Biotech sector to solve environmental and climate change problems. In fact, biotechnology is one of the most promising sectors to support the sustainability mission promoted by the European Green Deal, whose aim is to encourage the efficient use of resources towards a clean and Circular Economy by restoring biodiversity and reducing pollution (carbon-neutral, digital, and circular society). Nowadays, the environmental issue has become a relevant matter in the scientific, economic, and social fields. The growing sensitivity to environmental sustainability has given impetus to the green economy and has promoted a transformation process in the demand for green professional profiles and skills. Teaching and promoting sustainable practices are essential for those working in the Biotech sector, such as Universities, Start-ups, and Companies.

Green mentorship in Europe popped up around the EU following the recent Green entrepreneurship wave. Mentors have a fundamental role in supporting entrepreneurship, as much as the start-up capital (Sanchez-Burcks et al., 2018), and their role differs from the advisors/coaches. While coaching is generally applied to personal advising on career issues, the mentors usually assist students with entrepreneurial initiative to develop specific skills and knowledge. Despite its importance in helping entrepreneurs build a profitable venture, the full potential of mentoring relationships is rarely realised. The emerging new phenomenon of Green Entrepreneurship, including

in Biotechnology, is generating a growing demand for new professionals equipped with the skills necessary to support the Biotech entrepreneurial activities combined with the specific domain of the environmental areas: a Mentor for Green Biotech Entrepreneurs.

On the European level, very few materials are dedicated to supporting the Green mentors in their approach and mentoring activities. The present guide examines the overall process, roles and skills involved in green biotech mentoring and aims to provide the green biotech mentor with a good understanding of the mentoring journey under the green concepts and principles. By reading and using the guide, the mentor, as well as the mentee (the student), will: develop an understanding of the breadth and complexity of the Green biotech mentoring roles; develop an awareness of mentoring techniques and processes; examine the critical stages of a mentoring relationship and what happens within them; understand the skills and competences of a mentor and his/her relation with the mentee; and gain an insight into green mentoring.

GreenBE partners have incipient mentorship programmes in their institutions, counselling centres, students' entrepreneurial societies or innovation accelerators. The final goal is to help organisations supporting green mentorship programmes and mentors understand the dynamics of a successful green mentorship relationship students-mentors-organisation.

Contents

1. Green mentoring in the biotech entrepreneurship context	6
1.1 Green entrepreneurship.....	6
1.2. Mentoring	9
1.3 Mentoring for green entrepreneurs.....	13
2: Biotech Green Mentor profile	18
3: Developing biotech green mentorship programmes and plans.....	25
3.1 Introduction.....	25
3.2 Key steps to develop a mentoring programme	26
3.3 Mentoring formats.....	31
3.4 Some specificities of Life Sciences entrepreneurial mentoring programmes	32
4: Biotech green mentor code of practices	34
4.1 Working with Mentees	34
4.2 Professional Conduct	36
4.3 Excellent Practice	38
5: Student mentees profiling and mentoring relationships built	41
5.1. Introduction.....	41
5.2. Mentees-mentors diversity	42
5.2.1 Mentees regarding their learning style.....	42
5.2.2. Mentees and academic background.....	44
5.3. How mentees and mentor relationship is built?.....	47
5.4. Factors affecting relationship built.	48
5.5. Activities to build a mentoring relationship	52
5.6. Conclusions.....	54
6: In-person versus virtual mentoring	55
6.1. The meaning of Mentoring in Green Biotechnology Entrepreneurship	56
6. 2. Key points to be considered	56
6.3. Conditions for a successful In-person/face-to-face (F2F) or Online mentoring	60

6.4. F2F Mentoring	64
6.5. Online mentoring	68
6.6. How do we choose which is more suitable, F2F Mentoring or Online Mentoring?	72
6.7. Conclusions	74
7: DevGood practices – case studies of biotech green mentorship ..	77
7.1. Alina Nanu – Evic Product Testing Romania	77
7.2. Ionut Moraru – ProNatura.....	77
7.3. Irinel Proca – Laboratorium Life Science	78
7.4. Gianluca Cavalaglio – BioViridis SRL	79
7.5. Francesco Valigi – Genelab.....	80
7.6. Carles Cortes – CactusLoff	81
7.6. Anda Burcea – Alchimie	83

1. Green mentoring in the biotech entrepreneurship context

1.1 Green entrepreneurship

In recent years, the field of green entrepreneurship has gained an outburst thanks to promoting more sustainable business practices from an environmental point of view, particularly by developing and implementing green technologies. In fact, rapid economic growth, increasing human consumption, global warming, and increasing environmental pollution resulted in ecological deterioration¹. Demand for green products and services directly results from these environmental developments. In light of this, the technological development combined with the growing consumer interest in green products and services has fostered an ambitious change in the existing business models of companies. Sustainability and circularity represent a real innovation for the business world as they create significant positive impacts and significantly reduce negative ones for the environment and society through changes in the way in which the company and its network create, distribute and capture value or change their value propositions²⁻⁵.

Therefore, green entrepreneurship incorporates environmental, economic, and social aspects into its core enterprises, offers creative solutions for the production and consumption of goods and services, and suggests a business model that advances the greening of the economy (Figure 1.1)^{1,4,6,7}.

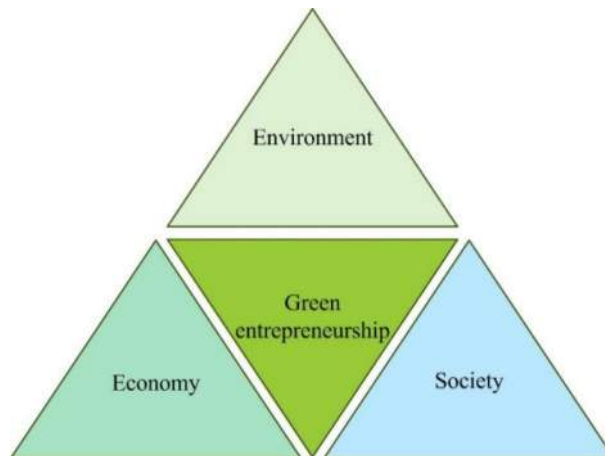


Figure 1.1. Green entrepreneurship is the central core of environmental, economic and social aspects.

Due to the use of resources, production of waste, and provision of goods and services, green business owners may be aware that all business activities impact the environment and society. As a result, they will develop their company considering three factors: the economy, the environment, and society. This has an obvious implication: whatever the activity, it will affect society and the environment. In turn, whatever occurs in the social and environmental domains will affect the economic activity. Currently, green entrepreneurship is crucial to the economy's growth because it contributes to creating new jobs by bringing sustainable ideas to market and meeting societal expectations for change. Moreover, green entrepreneurship can be seen as an agent of change that propels social and environmental progress ⁸⁻¹⁰. In this context, green business owners are essential players in the business ecosystem because they encourage the development of more environmentally friendly production techniques, which will, in turn, support green customers' environmentally friendly purchase habits. By using a green entrepreneurship approach, businesses can support innovations, services, and products that encourage and support consumers' goals

to live more sustainably and lessen the environmental effects of their consumption. The sustainable management and use of natural resources, chemicals, and wastes throughout the life cycle of the products and services is currently the green entrepreneurship's biggest issue. Green business is typically preferred in industries where consumers' lives, health, and safety are of utmost importance.

Amongst the sectors in which green entrepreneurship has developed most or is currently developing, the food, automotive, and construction sectors are noteworthy (Figure 1.2) ¹¹⁻¹⁵.

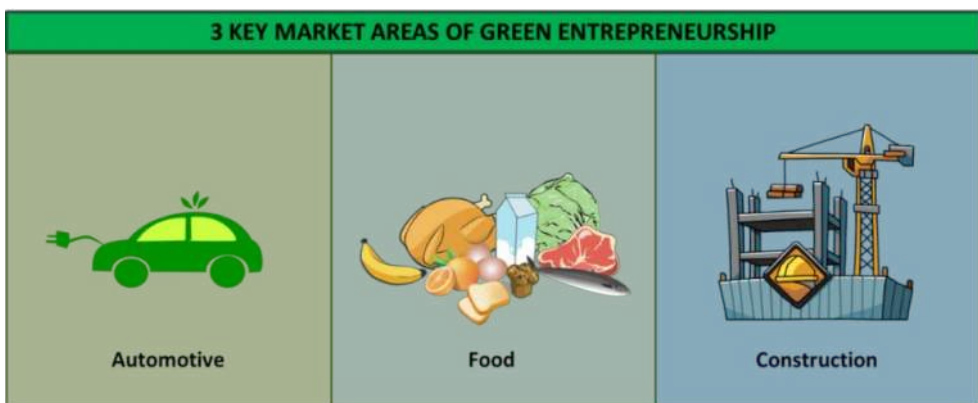


Figure 1.2. Green entrepreneurship key market areas.

The Food and Agriculture Organization of the United Nations (FAO) defines sustainable food as food with a low environmental impact that meets nutritional guidelines from an economic, accessibility, and acceptability cultural point of view. The sustainable food category includes all healthy, nutritious foods with a low environmental impact regarding land use, water resources used, and carbon and nitrogen emissions. The adoption of sustainable behaviours in the food industry brings benefits not only to the environment but also to the companies themselves. In fact, in recent years, the sustainability of products has become one of the fundamental factors in the choices made by consumers. To guarantee sustainability standards, in recent years, for example, the food industry sector has embarked on a race to dispose

of plastic and to introduce eco-friendly materials in production processes. Furthermore, the ecological reorganisation of technologies and production models has had benefits in reducing the environmental impact, proving to be advantageous in economic terms. The automotive sector is also focusing more and more on reducing the environmental impact of the cars themselves as much as possible, and the future predicts that almost all manufacturers will adopt a technology-neutral approach: this term refers to all those technologies which pursue the dual objective of obtaining maximum economic and environmental sustainability. The leading brands are already moving towards three main development trends: Battery-Electric Vehicles (BEV), Plug-In Hybrid Electric Vehicles (PHEV), and Fuel-Cell Electric Vehicles (FCEV), all aimed at reducing CO₂ emissions. Also, the construction and sustainable building represent sectors of primary importance in the context of European energy and environmental policies. The first step in achieving the goal of sustainable construction is undoubtedly to change the approach to the design of buildings and infrastructures. A careful design allows to guide most of the other choices that follow, given that it is in the design phase that the materials, construction methods, systems, technologies to be used, and the workers to be involved are chosen.

1.2. Mentoring

In this scenario, the role of mentoring—which is described as a practical strategy aimed at assisting entrepreneurs in growing their knowledge and abilities while launching green entrepreneurship or tackling the greening of an existing business—becomes essential.

Mentoring is an organisational tool that involves a mentor, typically an influential individual with advanced knowledge, engaged in providing support and mobility for the career of another individual, the mentee

¹⁶. Mentoring is, therefore, a training method based on the relationship (learning by interacting with others) between a senior person, the mentor with more experience, who makes his knowledge, skills, and expertise available to promote professional and personal growth of a junior subject, the mentee ^{17,18}. O'Neil also suggested the need to distinguish formal from informal mentorship ¹⁹. Formal mentoring is a process managed by an organisation that defines the place, frequency and duration of the meetings. Especially in recent times, public and private entities have launched ad-hoc programs, usually of short duration, to help teams of people transform their idea into reality thanks to the support of more experienced people. Informal mentoring, on the other hand, develops spontaneously and is based on mutual admiration and respect. It lasts longer than the formal one because it works a lot on the interpersonal relationship. An informal relationship is not structured and can materialise in different ways by offering, in addition to career support, psychological and emotional support that increases the mentee's self-confidence ²⁰. Formal programmes are the opposite of the informal nature of mentoring and are mostly ineffective. Table 1.1 shows the principal differences between formal and informal mentoring programmes.

Table 1.1 Differences between formal and informal mentoring programmes.

	Formal mentoring	Informal mentoring
Duration	Short deadline	Long deadline
Modality	Defined	To be define
Mentor background	Business/entrepreneur	Entrepreneur
Principal focus	Targets of organization	Mindset

Mentoring is a learning process that involves establishing a personal and direct relationship between mentor and mentee that can be mutually beneficial. Within this relationship, the mentor shares its experience and knowledge, instilling it into the mentee's way of thinking and thus inspiring the achievement of the mentee's goals and full potential. In the mentoring process, a real-life cycle can be identified in which five phases are established in the relationship between the Mentor and the Mentee ²¹ (Figure 1.3): Phase 1: Building rapport; Phase 2: Setting direction; Phase 3: Progression; Phase 4: Winding up; Phase 5: Moving on.

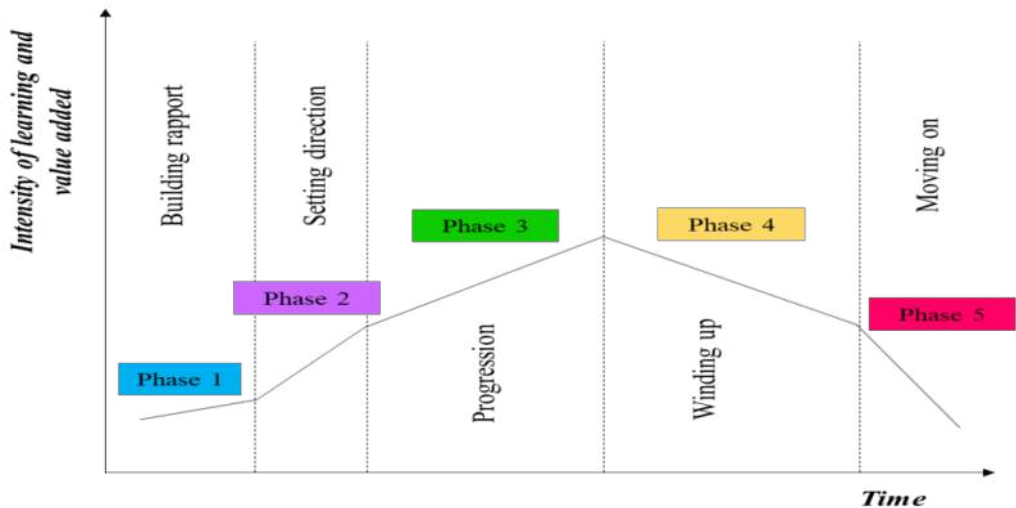


Figure 1.3. The Lifecycle Model of the Mentoring Process

1. **Building rapport**

In this phase, mentor and mentee will establish the optimal working method for both and the values on which their relationship will be based: trust, commitment, empathy, sincerity and continuous improvement.

2. **Setting direction**

For mentoring to produce good results, it is necessary that in this phase the objectives and future goals to be achieved in the short, medium and long term are established. The mentor should help the mentee clarify ambitions, but above all, to bring out strengths and weaknesses to understand the type of help and the resources needed.

3. Progression

After establishing and consolidating methods, values and objectives, the way of working becomes more and more efficient. This is, in fact, the most productive phase of the relationship.

4. Winding up

The mentee gradually becomes more and more self-confident. The mentor, on the other hand, becomes more reactive than proactive in this phase, given the growing independence and capacity of the mentee. The objectives set at the beginning of the report have almost all been achieved. The focus of the relationship shifts from business to personal development, and, by mutual agreement, new goals can be established in this respect.

5. Moving on

In the final phase, the sums of the goals achieved and the benefits obtained are drawn up.

In recent years, the interest of researchers in mentoring adopted in the field of entrepreneurship and aimed in particular at startups has grown. Entrepreneurial mentoring is clearly different from that carried out within already consolidated companies. In fact, the focus is not only on the development of the mentee but also on that of the company that is being born. Mentoring can influence the intention to do business²². For those who already have a business, on the other hand, it helps to develop skills and abilities, to integrate into the entrepreneurial fabric^{23,24} and to acquire a critical sense of the events that they will

face in their entrepreneurial journey ²⁵. The latter can be considered second-level learning, i.e., the mentee first learns through experience (learning by doing) and then learns further thanks to discussions and reflections initiated with the mentor (reflective learning) ²⁶.

1.3 Mentoring for green entrepreneurs

Mentoring aims to provide green entrepreneurs with professional advice and specialised technical content. At the same time, it must promote professional networks that can involve various green enterprises in the same sector. Mentoring for Green Biotech Enterprise ensures a series of advantages concerning the Mentor himself, the Mentee, and the company. In particular, the company will be able to obtain better recruitment, retention and progression of employees, means of supporting succession planning, motivated workforce with improved skills, improved communications across the business, reinforcement of culture change, shared tacit knowledge, helping build the learning culture, cost-effective personalised development programmes and maximising human potential (Figure 4).

All the fundamental elements of regular business mentoring are included in green mentoring, coupled with a more profound comprehension and appreciation of green business, and strategies to help people launch or green an existing business. The International Labour Organization (2023) states that green firms adopt concepts, policies, and practices that enhance the lives of their clients, staff members, the communities in which they operate, and the environment. The goal of green entrepreneurship is, in many cases, to reduce the effects of climate change and other environmental issues. Green businesses must manage their operations and produce their products in accordance with green principles and standards.

Respecting labour laws and the ideal of decent employment is crucial for green firms.



Figure 1.4. Principal outcomes from Mentoring for green entrepreneurs.

When defining green business, it is important to consider both the process (or production) of an economic activity and the result in the form of green products (goods and services). Entrepreneurs can start an explicitly "green" firm offering eco-friendly products (such as waste management and renewable energy, amongst others). As an alternative, green businesses might deliver their products or services via eco-friendly procedures or with the aid of clean technology (such as ecotourism). Figure 1.5 illustrates the columns of a green business.



Figure 1. 5. Principal columns of green business.

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2: Biotech Green Mentor profile

Since the position of a Green Mentor is not formally recognised, there is no official profile or list of required skills. The Green Mentor's mission is to "support the fundamental objective of the green entrepreneur, which is based on the maximisation of the environmental value created, through a socially empowering project, and over a viable and effective business model".

The Green mentor should be endowed with six fundamental qualities, as shown in Figure 2.1.

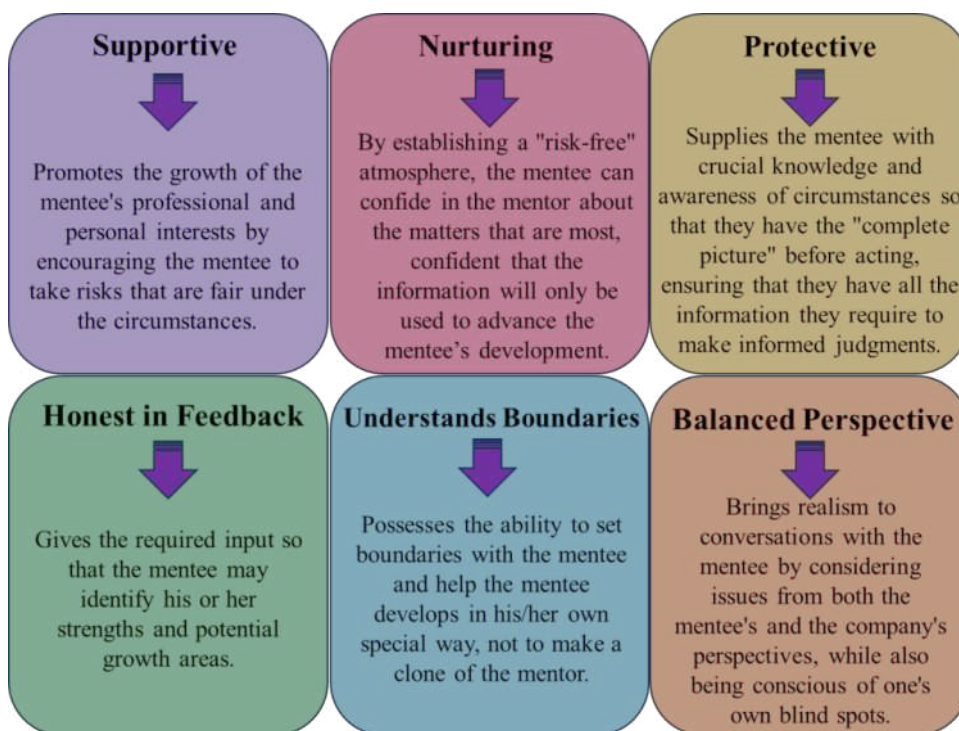


Figure 2.1. Fundamental qualities of Green Mentor.

In order to promote the new professional profile of mentor for green entrepreneurs, Green Education for Green Biotech Enterprise designs

and develops cutting-edge VET materials and products. It also identifies and develops the competencies, methodologies, and tools these mentors need to effectively support green entrepreneurship in Europe through VET. In particular, the Green Mentor must be able to support the development of or the shift to "green companies" through actions like waste reduction, ecodesign, recycling, or efficiency; encourage the study of entrepreneurship raising knowledge of environmental issues related to business prospects; impart technical know-how to assist businesspeople in identifying green market gaps and related remedies, and boost the employability of unemployed employees by assisting and advising them as they embark on a career as entrepreneurs in the green economy ^{1,2}. Table 2.1 shows the principal skills requirements for Green Mentors.

Table 2.1. Skills requirements for Green Mentors.

Green Mindset
Gain knowledge of the value of sustainability and the Green Economy for new and current enterprises across sectors.
Self-understanding the professional
Show awareness of one's own green views, attitudes, and behaviors. Recognize how these influence one's actions. Use this self-awareness to manage one's efficacy in achieving the general and green goals of the entrepreneur.
Commitment to self-development
Examine and raise the bar of their profession.
Enabling insights and learning in Green field
Work with the green entrepreneur to share knowledge and insights with a focus on the green economy and sustainable industries.
Outcome and action orientation
Utilize abilities and attitude to assist the entrepreneur in starting a green business or making the switch to a greener lifestyle.

Relationships between green mentors and mentees can emerge informally and spontaneously over time when mentees maintain regular contact with people with greater expertise ³. Relationships between green mentors and mentees can be:

- A single mentor working with a single mentee in a classic dyadic relationship.
- A group of mentors sharing their collective wisdom with one mentee.
- One mentor working with multiple mentees.
- Peer and near-peer mentoring structures.

The interaction between a single green mentor and one mentee working together as a pair has generally been examined as a dyadic structure or mentorship. This dyadic view of mentoring makes sense from a scholarly and practical standpoint. In the past, the process of mastering a skill and preparing for a profession has been based on an apprenticeship model where a novice learns by helping an expert ^{4,5}. In some learning environments, the apprenticeship structure is still the norm; however, this paradigm is shifting. According to several studies ⁶⁻⁸, a single mentor might not have all the connections, knowledge, skills, or other aptitudes that their mentee needs. As a result, various mentorship arrangements other than dyads can be crucial for mentees to succeed. In this scenario, mentorship triads are particularly interesting since they can consist of one mentee and two mentors, two mentees and one mentor, or a combination of the two. The most experienced member of the triangle mentors the slightly less experienced member, who in turn advises the person who is new to the field or area, creating a kind of mentorship ladder or cascade. Mentorship triads may occasionally work with three-way relationships that are marked by trust and responsiveness, offering career and support. This trio has also been called "closed" in some instances. In

other cases, mentorship triads could work more like adjacent dyads, with interactions between the pairs of members. An "open" triad has been used to characterise this arrangement (Figure 2.2).

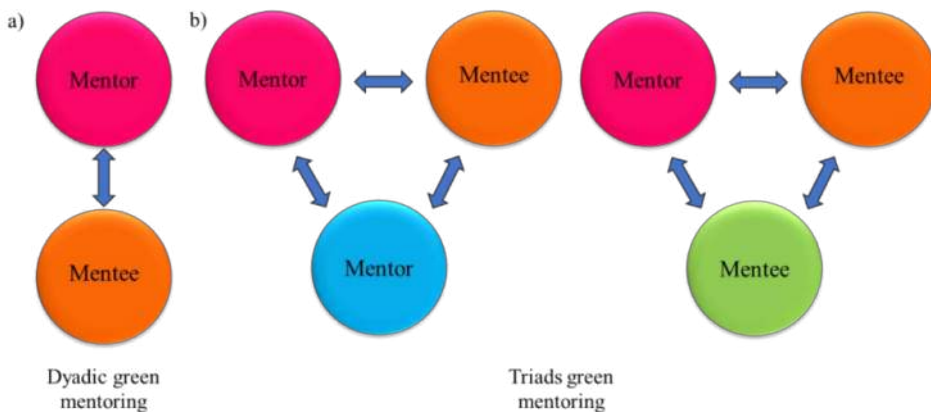


Figure 2.2. Green mentoring models.

Based on the aforementioned skills that a green mentor must possess, five principal targets must be achieved based on a series of knowledge and skills, detailed in the following.

Target 1: Green Mindset

The principal goal is to help new and current businesses in all industries realise the importance of sustainability and the Green Economy (Figure 2.3).

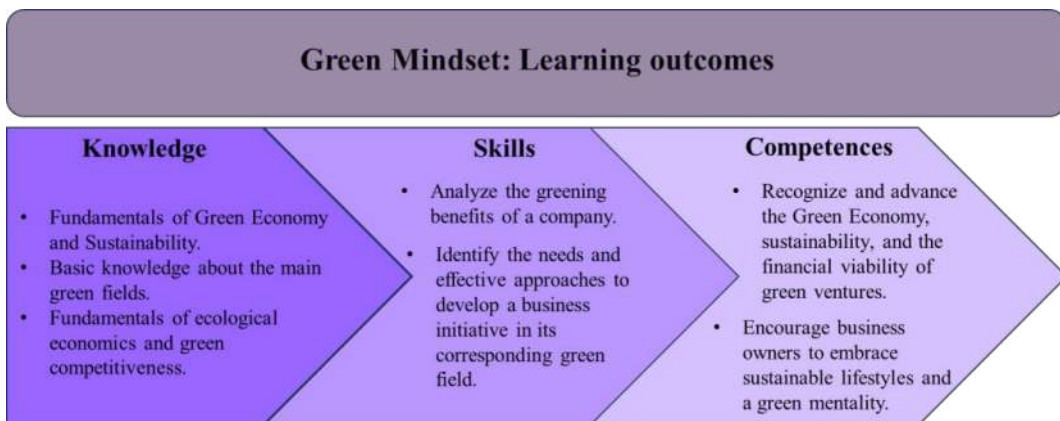


Figure 2.3. Learning outcomes of Green Mindset target.

Target 2: Self-understanding the professional role

The Green mentor's second goal is to demonstrate awareness of their green values, beliefs, and behaviours, recognise how these affect their practice, and use this self-awareness to manage their effectiveness in meeting the entrepreneur's overall green goals (Figure 2.4).

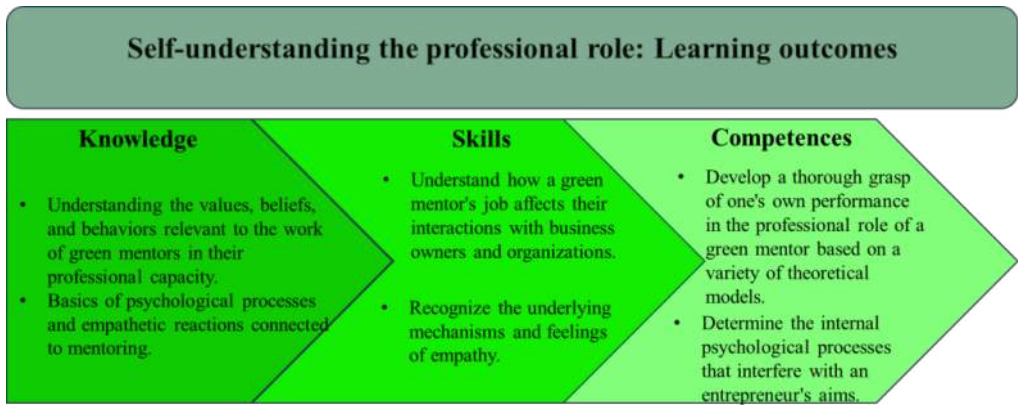


Figure 2.4. Learning outcomes of Self-understanding the professional role target.

Target 3: Commitment to self-development

The objective of this target is to develop and uphold the reputation of the profession by exploring and raising the bar of their practice (Figure 2.5).

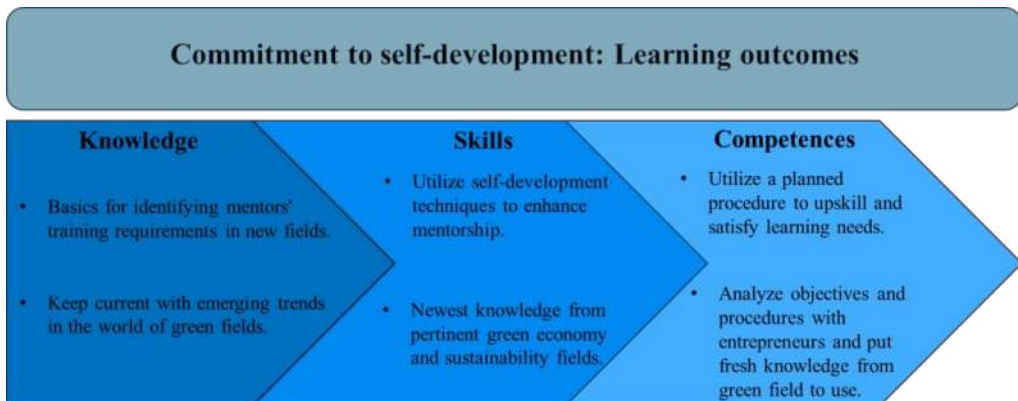


Figure 2.5. Learning outcomes of Commitment to self-development target.

Target 4: Enabling insight and learning in the green field

The main objective of this target group is to work with the green entrepreneur to gain information and learning with a focus on the green economy and sustainable sector (Figure 2.6).

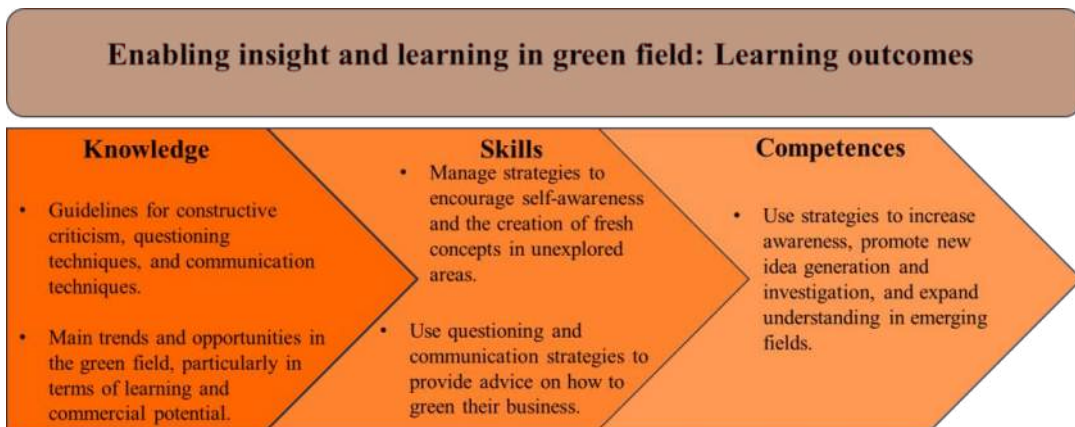


Figure 2.6. Learning outcomes of Enabling insight and learning in green field target.

Target 5: Outcome and action orientation

The main objective is to demonstrate approaches and skills in supporting the entrepreneur in creating a green company or the transition to green from an existing standard company (Figure 2.7).



Figure 2.7. Learning outcomes of Outcome and action orientation target.

By following the suggestions shared in this mentor-mentee relationship guide, both parties will benefit from shared information. A strong mentor-mentee relationship is vital for both parties from personal and professional growth perspectives. This majorly depends upon the mentors—that is, how well they are able to address mentees' worries and help them navigate through challenging workplace scenarios. Another aspect is connecting mentees to the right mentors who understand their opinions and situations.

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3: Developing biotech green mentorship programmes and plans

3.1 Introduction

At a European level, the transition to a Green Economy has been identified by the European Commission (EC) as a priority area to act as well as the promotion of entrepreneurship. The high potential of green jobs and the new path for a green economy has been noted. The EC highlights the biotech green entrepreneurship and green mentorship at this level under the strategy of the Horizon Europe framework supported by the general budgets of the EU. Green mentoring consists of all the basic components of general business mentoring alongside a deeper understanding and appreciation of Green Business and the techniques to support individuals to start a green business or green an existing business.

An excellent way to start developing mentoring programmes and plans is by looking at the end user's needs: Who is receiving the mentor's support? Who are those end users? According to the mentor definition, the person receiving support is the "Mentee", usually, Green Entrepreneurs and established businesses that want to become "greener".

Successful mentoring programs do not just happen. They are built upon thoughtful planning and sustained commitment to guiding participants through the mentoring process while continually improving the programme. This requires a lot of work, but the right tools will make the effort much easier.

According to findings described in the finalised Erasmus+ VET project (2015-1-ES01-KA202-015934), there are two very different schools of thought about the nature and purpose of mentoring, which can be

described as the US and the European models. These can be summarised as:

A *Sponsorship Model* (US model) – where the role of the mentor is as sponsor and protector of a younger person's career.

A *Developmental Model* (European model) – which emphasises the empowering of people to take charge of their own development and career momentum.

3.2 Key steps to develop a mentoring programme

Mentoring is a proven approach to drive rich learning and career development for mentees and mentors. Mentoring also benefits the organisation. For employers, mentoring increases talent retention, promotion rates, and employee satisfaction for mentors and mentees. Meanwhile, university mentoring is proven to improve student retention, boost job placement rates, and increase alumni engagement when tapping alumni as mentors (<https://chronus.com/how-to-start-a-mentoring-program>).

According to different mentoring programmes or mentoring software developers, there are five main steps to developing a successful mentoring programme:

1. Design the mentoring programme
2. Attract the participants in the programme
3. Connect mentors and mentees
4. Guide the mentoring
5. Measure the impact/success

Step.1 Design the mentoring programme

When starting to design a mentoring programme template, two main questions are raised:

- *Why should we start a mentoring programme?*

- *What does success look like for an organisation and its participants?*

To answer these questions, the target audience and its needs must be understood. It should be clearly defined where they are, who they are, their key motivations to get involved and their developmental needs. When all these are identified, SMART (specific, measurable, attainable, relevant and time-bound) mentoring objectives should be defined. The main advantages of defining clear mentoring objectives are:

- provide direction to programme participants
- establish programme key performance indicators (KPIs)
- help organisational leaders understand why they should offer their support

Successful mentorship programmes offer both structure and flexibility. The structure provides participants with a mentoring workflow to follow, which is critical in helping participants achieve productive learning to reach the defined mentoring-specific objectives. In addition, flexibility is essential to support varying individual mentoring needs across specific learning goals, preferences, and learning styles.

The main decisions to be taken into account when designing a mentoring programme should be the following:

- **Mentoring style**– which can be traditional, flash, or reverse
- **Enrollment**– open, application, or invite only
- **Duration**– can be weeks or months — or perhaps even just a single session
- **Connection type**– possibly 1:1, mentor groups, or one-to-many
- **Measurement**–tracking and reporting needs.

It is advisable to create a programme workflow diagram to explain each step of the mentoring programme. Details such as key actions, support resources, timeframes or criteria for moving to the next phase may be provided.

Mentoring software is available (for example, <https://chronus.com/software/mentoring-software>), which allows the delivery of a wide variety of mentoring programmes. Regardless of programme size, easy-to-use mentoring software can help get the mentorship programme started and running smoothly.

When talking about green biotech, the advancement of the green sector within an ongoing context of transition to a low-carbon economy in the world can foster entrepreneurship development and faster growth potential, particularly for youth-and women-led entrepreneurial initiatives, and such programmes have priority nowadays.

Step 2. Attract the participants in the programme

A successful mentoring programme relies very much on the existence of an effective programme promotion, mentor recruitment, and mentoring training.

When formal mentorship programmes are introduced in organisations, there is generally natural enthusiasm, which does not always lead to high participation rates. The main reason is an adequate or poor promotion of the programme. The mentors and mentees do not understand the benefits from the very beginning, and efforts should be made in this respect. In addition, this may be their first opportunity to participate in mentoring for some of them. In this sense, the programme designer will need to:

- emphasise the benefits of mentorship programmes to show that participating is worth the time and effort;
- educate key leaders and stakeholders on the programme's benefits and strategic value to the organisation.

Having a solid mentors' team can be a challenge, so the mentors' needs should be clearly evaluated:

- How can you help mentors be more efficient with the time they have to dedicate to mentoring?
- To formally recognise the mentor involvement, to motivate and attract additional mentors to the program

After an initial orientation of both mentors and potential mentees, it is important to provide tips and best practices throughout the mentoring programme to help participants stay on track and get the most out of the programme.

Step 3. Connect mentors and mentees

A successful mentoring relationship depends on a proper match between mentors and mentees, which is often one of the most challenging aspects of a programme. Participants will bring various backgrounds, competencies, learning styles and needs. What is good for one person may be improper for another.

Two different matching types could be approached in the programme: admin-matching or self-matching. Self-matching involves fewer administrative tasks, which can be a real plus in high dimension programmes. It is recommended to allow mentees to select a particular mentor or submit their top choices.

For larger groups of employees or students, it is advisable to get the programme started by bulk or admin matching. Taking advantage of different software that pairs mentors and mentees can also be a fast solution. However, at the end evaluating various match combinations before finalising as ensuring quality mentors for hard-to-match mentees can be challenging. The more you know about your participants, the better chance your programme will have a positive outcome.

Step 4. Guide the mentoring

After the participants are enrolled and matched, mentoring must start, but if direction and a clear plan are missing, the mentoring relationship is vulnerable to losing focus and timing. In this respect, it is vital to provide some structure and guidance throughout the mentorship.

As a mentoring connection progresses, checkpoints must be established where mentorships report on their progress. It is essential to have a formal process that brings closure to the mentoring experience:

- give time to the mentor and mentee to reflect upon what was learned
- for the mentee to set discussions of the following steps
- collect feedback on the benefits of the programme

Step 5. Measure the impact/success

One of the most crucial phases is understanding how the programme measures up to expectations.

Successful mentorship programmes should be tracked and assessed from three different points of view: the programme, the mentoring connection and the participant. Metrics and feedback should be captured throughout the programme lifecycle. At the programme level, metrics must be connected directly to the defined business objectives (e.g. promotion rates of programme participants to non-participants; the progress participants make at each step).

Some of the common questions to be taken into account may be:

- Are mentorships getting off to productive starts or lagging behind?
- Is the mentoring timeframe too long, too short, or just right?
- Are participants leveraging content resources you have provided?

For participants, it is important to understand the impact of mentoring in terms of outcomes while acquiring programme feedback. One of the easiest ways to capture outcomes and feedback is through surveys (e.g. how well the mentoring programme met its goals and the goals of the organisation; ideas for improving the programme).

Meanwhile, the benchmarking of the mentoring program should be checked in the areas of enrollment, matching and engagement — meaning to compare the programme performance (good, average, or bad) in comparison to other mentorship programmes.

3.3 Mentoring formats

There are different mentoring types leading to successful impact, like: employee career mentoring, mentoring circle, or reverse mentoring. Deciding which mentoring format is right for the organisation and students or employees is an important issue.

Employee career mentoring is one of the most common mentoring formats and consists of a one-to-one mentoring relationship which can last nine to 12 months. Offering formal career development is a tangible way to show employees that their career trajectory matters. Employees get the opportunity to learn and build skills, which can help grow their careers, keeping them from feeling stuck in their positions.

Mentoring circles is a peer-to-peer format that enables employees to find peers who share common interests or learning objectives and develop together as a group. People from across departments and generations can learn from one another, expanding institutional knowledge. Employees can also build cross-functional relationships with people of similar or diverse backgrounds. Employees of similar backgrounds can find a psychologically safe space for discussion and support, where people can feel free to self-identify and be their authentic selves.

Reverse mentoring pairs a more senior employee with a more junior employee. Actually, the younger employee serves as the mentor, providing senior members of the organisation with up-to-date information on the latest frontline experiences or technical skills. As a format, it can be a one-to-one or group setting.

3.4 Some specificities of Life Sciences entrepreneurial mentoring programmes

In the Life Science field, including Biotech, innovative entrepreneurship is essential. Cultivating college students' entrepreneurial potential has not only become a key link in social development and social innovation but also contributes to the economic development of a country or region by promoting innovation and creating employment opportunities (Horng et al., 2021). The problem of how to succeed in developing human capital from universities to businesses has become a critical issue when confronting global competition. Promoting the entrepreneurial potential of biotech university students can help them transform their entrepreneurial consciousness into entrepreneurial behaviour and, therefore, lead to more jobs and a driving effect on the economy, and mentoring is the most commonly used teaching method in entrepreneurship education.

In Life Science, innovation competency should be included in developing related courses to improve the success rate of the educational process (Horng & Hu, 2009). Meanwhile, several studies have asserted that creative problem-solving (CPS) might not only increase individual creativity and innovation but also function as a critical driver for entrepreneurship (Horng et al., 2021).

Mentoring relationships are embedded in the educational process in higher education. The informal focus on mentoring has given way to a proliferation of formal mentoring programmes at universities worldwide. The purposes of university student mentorship are to enhance the academic development (including the development of research skills and a disciplinary identity), professional (career) development, and personal (psychosocial) development of graduate students.

(Gail Lunsford et al., 2017). It was shown that students experienced mentoring relationships in a variety of forms, including formal, informal, professional, and peer mentoring (Watson et al., 2009).

The design and delivery of medical mentoring programmes differ between biotech schools, and programmes are adapted to meet specific institutional or departmental requirements. Variables include mentee, mentor, and programme characteristics (Nimmons et al., 2019). Methods to recruit mentees to programmes are diverse and include the following: emails, flyers in the canteen, lecture shout-outs, and social media advertising. Biotech mentors come from a range of backgrounds depending on the aim of the programme, and can be academic staff, recent graduates and successful biotech entrepreneurs. Many mentors put themselves forward for the role, and others are recommended or have demonstrated an interest in teaching or mentoring. Early career specialists with less than ten years experience can have a great impact on mentees because they are often more able to relate to students' current personal and professional needs than more senior mentors and are likely to have more up-to-date information on the speciality application and interview process (Nimmons et al., 2019). Mentors should receive training in the requirements of the role and in delivering effective feedback. Incentives should be offered, for example, recognition of mentoring for promotion. Likewise, mentees should be made aware of what is expected of them.

Biotech mentoring programmes tend to be based on and modified from successful initiatives at other institutions and further developed from mentee/mentor feedback. Less often, a needs analysis is performed, or a programme is piloted prior to delivery, which helps to ensure that the programme is designed adequately and effectively.

Programmes may be funded by various sources, including the host university and/or third parties.

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4: Biotech green mentor code of practices

For Green Biotech Mentors, the code of practices will function as a set of guidelines that ensure, if followed, an ethical, healthy, professional, trusting and productive mentoring relationship with their mentees. By adhering to the code, Mentors will be able to forge a strong and effective bond with their mentees, ensuring, therefore, that the next generation of biotech professionals will prioritise sustainability in their work, thus contributing to a greener and more sustainable future.

4.1 Working with Mentees

Through working with mentees, a mentor should be able to guide and support the individuals in their personal and professional development.

Whether mentoring Life sciences/Biotech students or counselling green organisations, a green mentor should adhere to the following:

Open Communication and Accessibility: Mentors should maintain open communication with mentees, be accessible, and provide supportive feedback. Mentors should be available beyond office hours and promote an environment where questions are encouraged.

Goals and Challenges: Mentors should set clear and precise goals and expectations, and challenge the mentees to go beyond their own limitations. Time management and flexibility in achieving goals should also be emphasised.

Passion and Inspiration: Mentors should inspire critical thinking, creativity, and confidence. Demonstrating a passion for research and the work being done can influence their mentees positively.

Supportive Personal Relationship: A supportive relationship between mentor and mentee is vital. Spending quality time together and having a personal interest in the student outside of research are essential aspects of a healthy and effective relationship.

Mutual Respect and Trust: The mentoring relationship should be built on mutual respect, trust, and appreciation. Mentees should feel respected and trusted in their abilities by mentors.

Exchange of Knowledge: The mentoring process should involve exchanging knowledge, building research skills, and applying classroom theory to real-world experiences.

Independence and Collaboration: Mentors should foster independence and collaboration in their mentees. Allowing protégés to think independently while being part of a team effort is valuable.

Role Modeling: Mentors should lead by example, model interactions with others, and share struggles and experiences to reduce intimidation. They should stand as a role model for leadership and ethical behaviour, one that each mentee would feel inspired to follow.

Promoting Environmental Responsibility: Mentors should emphasise the importance of environmental sustainability and green and ethical practices within the biotech field, encouraging their mentees to consider the environmental impact of their work.

Confidentiality: It is essential for mentors to establish trust and a safe environment for mentees. They must handle information discreetly, ensuring strict confidentiality and secure record keeping. Setting clear limits on when information may be shared further strengthens the trust and respect in the mentor- mentee relationship.

4.2 Professional Conduct

Building a Reputation

By building a positive reputation within the communities and the fields they represent, mentors strengthen the credibility and effectiveness of their practice and its reputation as a valuable and effective tool for personal and professional development. To achieve this, a mentor must embody:

- **Ethical Conduct:** Mentors must adhere to ethical principles, ensuring that their actions align with the highest standards of integrity and honesty. This includes avoiding conflicts of interest and safeguarding the confidentiality of their mentees.
- **Professionalism:** Demonstrating professionalism in all interactions, communication, and engagements with mentees fosters a sense of respect and seriousness about the mentorship process.
- **Empathy and Respect:** Cultivating empathy and respect towards mentees' unique experiences, perspectives, and goals is essential for creating a supportive and trusting mentorship environment.

- **Accountability:** Taking responsibility for one's actions and commitments is a hallmark of a reputable mentor. Being reliable and accountable builds trust and credibility with mentees.

Integrity

In order to build trust and maintain their credibility, mentors must uphold their professional integrity by:

- **Accurate Representations:** Mentors must be truthful about their qualifications and background.
- **Honest Representation of their Value:** Mentors should transparently and realistically communicate their capabilities.
- **Respecting Intellectual Property:** Mentors should credit the original creators of any materials used in their mentoring practice.

Recognising Equality and Diversity

Mentors should always strive to foster and create an inclusive and empowering environment for all students, ultimately promoting their personal growth and success by:

- **Avoiding Discrimination:** Mentors should always treat all individuals with respect and fairness, actively avoiding any form of discrimination based on factors such as background or identity.
- **Enhancing Awareness:** Mentors should engage in self-reflection to identify and overcome unconscious biases, ensuring that their professional relationships are free from personal prejudices.
- **Addressing Unconscious Bias:** Mentors should embrace and explore individual differences with an open mind, striving to approach each student without bias.
- **Challenging Discriminatory Behavior:** Mentors are responsible for challenging any discriminatory behaviour by encouraging positive change and understanding.

- **Monitoring Language:** Mentors should be mindful of using a language that promotes inclusivity and avoids stereotypes.
- **Engaging in Developmental Activities:** Mentors should actively and continuously learn and grow in equality and diversity matters.

Inappropriate Interactions

Mentors must ensure that the mentoring relationship remains focused on their mentees' personal and professional development, free from any inappropriate or harmful influences by:

- **Setting Clear Boundaries:** Mentors must establish and maintain appropriate boundaries
- **No Romantic or Sexual Relationships:** Mentors should avoid such relationships with mentees
- **Vigilance against Intimacy:** Mentors should be alert to potential intimate situations and must take appropriate actions to prevent them should they arise or be ready to terminate the mentoring engagement if needed.

4.3 Excellent Practice

Ability to Perform and Continuous Development

Mentors should ensure the excellence of their practice, the ability to perform effectively and to provide responsible support to their mentees by:

- **Qualifications, Skills and Experience:** Mentors should possess the necessary qualifications, skills and experience to guide their mentees successfully.
- **Physical and Mental Fitness:** A healthy level of physical fitness would assist mentors in carrying out their duties effectively and with energetic motivation.

- **Competence and Knowledge:** Mentors should continually strive to enhance their expertise and knowledge in their respective fields. Maintaining a solid foundation of knowledge helps mentors provide valuable insights and guidance to their mentees.
- **Continuous Learning:** Mentors should embrace a growth mindset and be open to learning from their mentees and other mentors. Staying receptive to new ideas and feedback allows for personal and professional development.

Legal and Statutory Obligations

Adhering to legal and statutory obligations is crucial for mentors, reflecting their commitment to ethical and responsible practices. They must comply with relevant laws, organisational policies, and privacy regulations while maintaining confidentiality. By adhering to their legal and statutory obligations, Mentors demonstrate their commitment to an ethical and responsible practice, ensuring the professionalism of their services. Moreover, since Green mentors have a responsibility to guide and advise their mentees on sustainable and environmentally friendly practices, while the specifics of legal and statutory obligations can vary depending on the region and jurisdiction, a Green Mentor should be familiar with:

- **Environmental Regulations:** Familiarise yourself with local, national, and international environmental laws and regulations that apply to the biotech industry. These may include requirements related to waste management, emissions, pollution control, and conservation.
- **Biotechnology-Specific Regulations:** Stay updated on regulations that pertain specifically to biotechnology practices, such as genetic engineering, gene editing, or the use of genetically modified organisms (GMOs). These regulations may

cover research, development, testing, and commercialisation of biotech products.

- **Ethical Considerations:** Encourage ethical conduct in all aspects of biotech operations. This includes respecting the rights of human subjects in research, considering the welfare of animals involved in experiments, and addressing potential social and economic impacts of biotech advancements.
- **International Treaties and Agreements:** Some biotech activities might be subject to international agreements or treaties. Familiarise yourself with relevant agreements like the Cartagena Protocol on Biosafety, the Nagoya Protocol on Access to Genetic Resources, and the Convention on Biological Diversity.
- **Corporate Social Responsibility (CSR):** Guide your mentees on implementing CSR initiatives that align with their biotech business, emphasising transparency, accountability, and positive social and environmental impacts.
- **Staying up-to-date:** As laws and regulations change over time, it is essential for mentors to stay up-to-date with developments in the biotech industry and relevant legal frameworks.

Ongoing Supervision

By embracing ongoing supervision, Mentors enhance their skills, maintain ethical standards, and provide quality support to their mentees. This is achieved by:

- **Reflective Practice:** Mentors should regularly and critically analyse their mentoring interactions for professional development.
- **Engaging in Supervision:** Mentors should constantly seek guidance from qualified supervisors or peer groups.

- **Maintaining the Quality of Supervision:** Mentors should maintain objectivity and confidentiality in their relationships with their supervisor or peers to foster honest and healthy discussions.
- **Discussing Ethical Dilemmas:** Mentors should openly discuss any ethical dilemmas or potential breaches of the professional code with their supervisor or peer supervision group to make the best ethical decisions.

5: Student mentees profiling and mentoring relationships built

5.1. Introduction

Mentoring and coaching are two related concepts, and their learning methodology is very similar. However, their fundamental aspects are quite distinct, with the relationship built between players being one of the most prominent differences. Whereas coaching relies on short-term relationships, mentoring establishes voluntary and long-term relationships that focus on goals and capabilities in the near future (Clutterbuck, 2004; Audet and Couteret, 2012). In the scenario of green entrepreneurship, skills adopted by mentees during mentoring are related to widening their horizons and have a broad point of view, including capabilities related to decision-making, change management, identification of new opportunities, and networking skills, amongst others (Audet and Couteret, 2012). Moreover, the fact that mentoring is primarily a volunteer process increases the personal and affective relationship for both parties, including empathy, trust, and respect, whereas the "desired obtained results" remain in a second plane. Altogether, in this chapter, we will describe the

mentoring relationship built along the mentoring process between mentoring participants: mentees and mentors. Moreover, to better understand this relationship, we will describe mentees' profiling, including the possible relationship between their academic background and the green biotechnology mentoring process.

5.2. Mentees-mentors diversity

5.2.1 Mentees regarding their learning style

Human beings are diverse. Thus, different individuals prefer learning through different approaches. According to Mumford and Honey (1986), four learning styles exist (figure 1). It is essential to notice that in very few cases, a mentee fits into a single learning style group, and the most common profile is a mix of them. Indeed, empirical evidence indicates that mentoring processes based on a single learning style tend to fail. In any case, defining the 'mentee's learning style can help direct the mentoring process in one or another direction. Learning styles, as defined by Mumford and Honey, are:

- **Activists.** They are individuals who learn best through active participation and hands-on experiences. They enjoy engaging in group activities, discussions, and practical experiments. They prefer learning through trial and error and tend to be enthusiastic and spontaneous in their approach.
- **Reflectors.** They are learners who prefer to observe and think about information before acting on it. They like to take a step back, analyse situations, and consider different perspectives. They enjoy observing others, keeping journals, and taking time to reflect on their experiences.
- **Theorists.** They are individuals who prefer to learn through logical reasoning and systematic analysis. They enjoy working with models, theories, and concepts to understand the underlying

principles. They like structured learning environments, clear objectives, and logical explanations.

- **Pragmatists.** They are learners who focus on the practical application of knowledge. They prefer to see how information can be used in real-world situations. They enjoy applying concepts and theories to solve problems and are interested in immediate, tangible results.

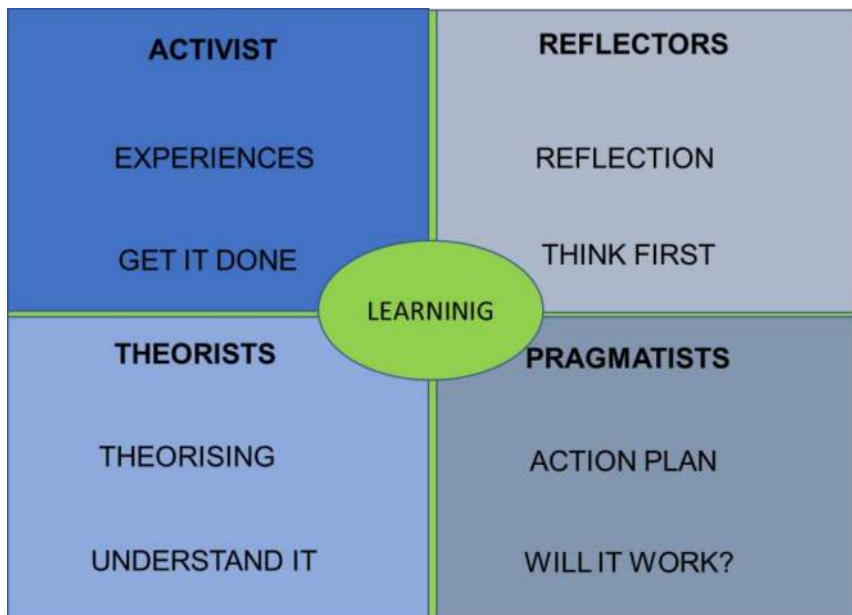


Figure 5.1. Types of learning styles, according to Mumford and Honey (1986), and mechanisms and goals followed.

Related to the previous paragraphs, it is relevant to point out that different types of learning styles result in different types of entrepreneurs. In this sense, Tomas Andersson (Andersson et al., 2010) categorises entrepreneurs into five different types:

- **Creative Entrepreneurs:** bring novel ideas and new products or services to the market that satisfy new consumers' desires.

- **Technology-Based Entrepreneurs (Technopreneurs):** somehow related to creative entrepreneurs but focused on technological innovations.
- **Knowledge Entrepreneurs:** provide entrepreneur-related knowledge to help other entrepreneurs succeed with their ideas in different disciplines.
- **Entrepreneurial Scholars:** they can be considered intellectual venture capitalists and are related to knowledge-driven companies. They are typically scientists.
- **High-Expectation Entrepreneurs:** final creation of start-ups; these entrepreneurs are the main ones responsible for creating a dynamic, open and adaptative economic system.

Knowing the type of learning style of the mentee and his/her possible predisposition to become one specific type of entrepreneur can be very useful in the mentoring relationship. With this information, the mentor can channel the learning predisposition of the mentee through appropriate approaches (closer to the 'mentee's natural way of learning). This can result in a significant learning experience for the mentee, as he/she will be more comfortable and motivated with the learning process. A sense of learning and advancing also creates a confidence and self-esteem atmosphere that is very useful in the mentoring process.

5.2.2. Mentees and academic background

Green biotechnology involves the application of scientific and technological advancements to improve food production and reduce its environmental impact (agriculture productivity, sustainable farming practices), to obtain living beings (microorganisms, animals, plants)-derived products in a less contaminating process, and determining new processes to reuse residues (circular economy), amongst others. In this sense, academic areas such as genetic

engineering, plant breeding, molecular biology, microbiology and bioinformatics are the most related to addressing global challenges related to crop improvement, food security and environmental sustainability. However, a more comprehensive range of academic areas is involved when referring to Green Entrepreneurship as establishing and operating businesses that prioritise environmental sustainability and contribute to developing a greener and more sustainable economy. Although no specific academic background is required to become a green entrepreneur, certain fields of study can provide a solid foundation and valuable knowledge for pursuing a career in this area. Next, academic backgrounds related to Green Entrepreneurship are listed:

- Disciplines directly related to biotechnology, as:
 - o Biology: crucial for knowledge of the fundamental principles of biological systems at different levels (e.g., genetics, physiology, biochemistry, molecular biology, ecology, taxonomy ...).
 - o Biotechnology: a comprehensive understanding of the techniques and tools used in the manipulation of biological systems in order to take advantage of them.
 - o Agronomy: a deep understanding of plant growth, development, and crop production, as well as farming and animal-derived goods.
 - o Genetics: aims to understand and manipulate plant, animal or microorganism genomes.
 - o Bioinformatics: valuable discipline for analysing and interpreting complex biological data.
 - o Environmental Science: knowledge of the biology of entire ecosystems, aiming to address environmental sustainability.

- Chemistry: understanding biochemical processes and the interactions between molecules
- Microbiology: focused on studying the biology of microscopic organisms (viruses, bacteria, algae, fungi, slime moulds, and protozoa), which can be extremely useful for Green Biotechnology projects.
- Business Administration/Management: provides essential skills for running a successful enterprise.
- Sustainability studies: offers a comprehensive understanding of sustainable development principles and practices
- Engineering/Technology: focuses on developing innovative green products or solutions. Amongst others, disciplines related to energy saving and renewable energy sources (i.e., more efficient and renewable energy systems), water saving (i.e., more efficient water transport channels), and building construction (i.e., eco-friendly designed houses).
- Social Entrepreneurship: combines business principles with a focus on addressing social and environmental challenges.
- Political sciences: provides a vast knowledge of different approaches to a specific country/region development and economics, amongst others, and is responsible for making decisions. Networking and diplomacy are also essential features of this discipline.

It is evident that not all the knowledge needs to be concentrated on the same person, but it is true that to be an entrepreneur in green biotechnology, it is crucial to have at least certain skills, as pointed out by Azid and Rowland (2018), and that those skills must be incorporated into the education system. To date, there is no systematic information on which kind of entrepreneur education the biotechnology students receive that can be oriented to green entrepreneurship. Therefore,

mentors must deal with very different academic backgrounds from their mentees.

While a relevant academic background is beneficial, it is essential to note that green entrepreneurship also requires skills such as creativity, critical thinking, problem-solving, and a passion for sustainability. Additionally, gaining practical experience through internships, networking, and participation in sustainability initiatives or business competitions can further enhance understanding and readiness for green entrepreneurship.

5.3. How mentees and mentor relationship is built?

Clutterbuck & Lane (2004) define a five-step progress in establishing the relationship between mentees and mentors and describe the Lifecycle (or Five Steps) model. This model and different aspects of meetings within each phase are described in the Green Mentor Handbook (European Commission, 2015). The main aspects of the five different phases concerning the relationship built between mentees and mentors are:

- Phase 1: building rapport. The main goal of initial meetings within the first phase is to generate the proper environment for the mentoring process. During these initial meetings, confidentiality (trust) and respect (empathy) will be top priorities.
- Phase 2: setting direction. Based on the environment generated during the first meetings, it is time to clarify the aims and objectives of the mentoring process. Clear communication is especially needed in this phase.
- Phase 3: progression. At this point, the relationship between the mentee and mentor is fully established, which is the basis for the

mentee to gain some independence due to his/her greater confidence and the orientation received from the mentor.

- Phase 4: winding up. The mentee is and feels able to make his/her own decisions, and the learning process becomes reciprocal for the first time. The mentor's role is more reactive, and the mentee leads the mentoring process.
- Phase 5: moving on. From the built relationship perspective, this stage arrives once the meetings lose freshness and either the mentor or the mentee feels the mentoring process as something mandatory (constrained). This stage often coincides with completing all or most of the goals proposed in phase 2. In this step, the mentoring process can be considered finished.

However, this model is not universal because some other authors define four stages: initiation, cultivation, termination and redefinition (Ragins and Kram, 2007). The fundamental aspects, at least the one regarding the relationship built, are shared with the ones proposed by Clutterbuck & Lane (2004). This 4-staged process includes a final redefinition phase, consisting of a longer relationship that ends in a friendship relationship, in which the main goal is far from being related to mentoring, although this does not mean that the learning process is over (Memon et al., 2015; Ragins and Kram, 2007).

5.4. Factors affecting relationship built.

Different factors influence the personal and professional relationship between mentors and mentees depending basically on how mentoring occurs (face-to-face or remote) and the structure and formality of mentoring sessions (European Commission, 2015). In this sense, factors affecting the relationship built, dependent on the type of interaction, are:

- Face-to-face mentoring: sessions are done in person. In practice, this is usually the best way to get started in a relationship and should be used as much as possible.
- Remote mentoring: for various reasons, it may not be possible to meet face to face, so sessions can also be arranged via Skype, Zoom, Teams or phone, or, in some instances, e-mails.
- Formal mentoring: sessions are structured for a fixed period and usually planned in advance. They form the bedrock of the relationship
- Informal mentoring: sessions are more spontaneous and varied in length. Informal sessions work best when they are mixed with formal sessions. They can include: face-to-face, remote, e-mail, or even messaging
- Group mentoring sessions: usually involve a mentor working in a group with two or more mentees representing two or more businesses. These sessions are very collaborative, as mentees also learn from their fellow entrepreneurs.

In addition, mentoring can be affected by many other factors, **external** or related to the specific circumstances where the mentoring process is taking place and **internal** or related to the personal features of the mentee and mentor (Sambunjak, 2015). These factors can be categorised into three contextual levels: societal, institutional and personal (figure 5.2, adapted from Sambunjak, 2015). The interplay of all these factors can help or hamper the mentoring process.

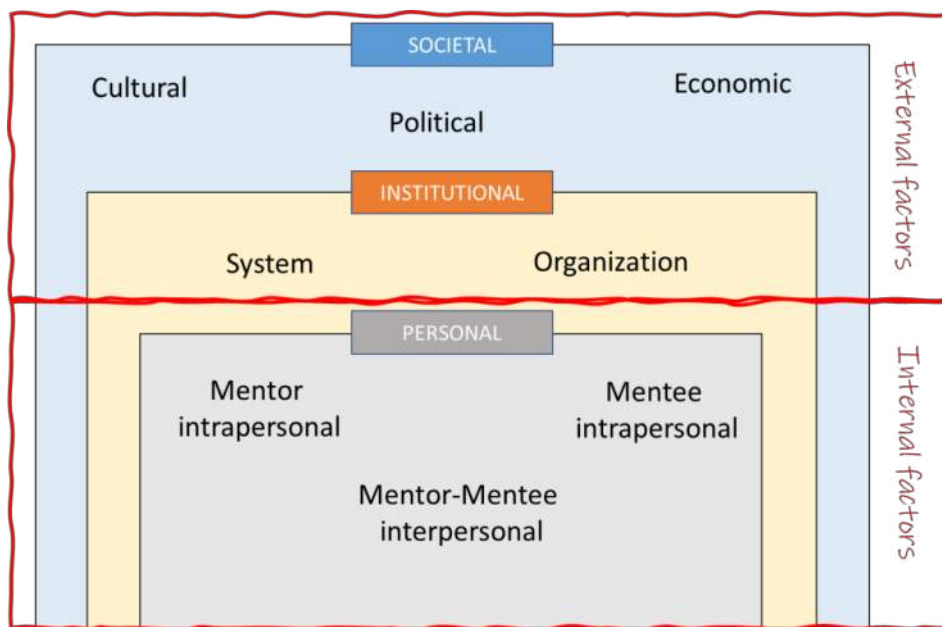


Figure 5.2. External and internal types of factors, and subcategories within them, that affect the mentoring process (adapted from Sambunjak, 2015).

Factors affecting the good progress of mentoring have been listed. However, several authors described factors that can ruin the mentoring process, which makes a frustrating and bothering termination phase (Figure 3; Scandura, 1998). These inconveniences are generally determined by the personal features of mentees, mentors, or both. For instance, changes of interests of either mentors or mentees, different points of view and judgements, trespassing in excess personal lives and problems, as well as 'mentor's repressive attitude on mentees' progress, lack of support, or establishment of unrealistic expectations, can destabilise and alter the confidence and the basis of the relationship between partners, and finally destroy the mentoring process (Hennefrund, 1986; Scandura, 1998). Duck (1994) classified the possible types of destructive relationships into four possible types:

- Negative relations. Defined as a toxic relationship where the mentor acts as a tyrant, egocentric and exploitative. Thus, this destructive relationship depends on the mentor's personal features.
- Sabotage. Either mentor or mentee can adopt an agonist attitude characterised by taking revenge on the other person or ignoring him/her (silent treatment). A mentee's unconcerned attitude or mentor favouring (i.e. promoting other mentees in the group) can trigger sabotage, which may result in a dysfunctional mentoring relationship.
- Difficulty. Based on the disagreement of the judgement rather than a bad personal relation. The absence of malice, however, does not imply that the mentoring relationship is not dysfunctional.
- Spoiling. It may occur when both mentee and mentor have a very close vocational interest in a specific area and one or other steps in the other's field. This can generate a betraying feeling and a consequent failure of the mentoring process.

This categorisation proposed by Duck (1994) is a way to map possible dysfunction in the mentoring process. However, additional relational behaviours can be added to this list, including submissiveness, deception, and harassment (Scandura, 1998). Most of the time, these personal interactions we briefly described can hamper or impede the mentoring process. Additionally, non-personal features or mentee-mentor relations related to achieving fixed goals are also important. In this case, the mentoring relationship is pleasant and polite but fails in the formation of the mentee because the mentor does not have the qualifications to give the necessary advice to accomplish the established goals.

Altogether, different characteristics of mentees and mentors, and the established relationship between them or the failure to achieve objectives, can result in dysfunctional mentoring. This situation is unstable, resulting in the generation of a bad relationship characterised by negative outcomes on the mentee's side (low self-esteem, low job satisfaction termination, stress) and on the mentor's side (anxiety, jealousy, betrayal). A graphical representation of the causes and consequences of dysfunctional mentoring is shown in Figure 3 (adapted from Scandura, 1998).

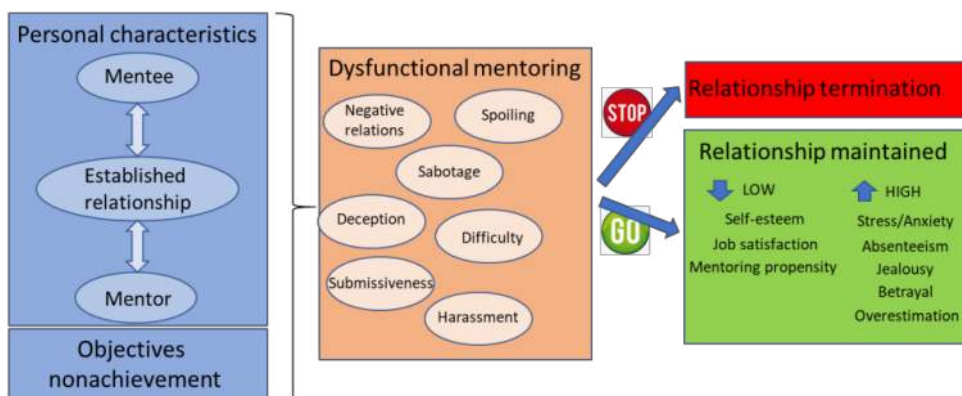


Figure 5.3. Causes and outcome of dysfunctional mentoring.
Adapted from Scandura, 1998

5.5. Activities to build a mentoring relationship

To build a constructive and appropriate relationship for the mentoring process, activities of different nature can be proposed (Figure 4). These activities are not exclusively directed to increase mentees' knowledge but also to gain self-confidence and create a proper mentor-mentee relationship. Moreover, these activities will be adapted to each phase proposed by Clutterbuck & Lane (2004). Some examples of such activities are described in the following paragraphs:

- **Leisure activities** (Figure 5.4 A, B). These activities aim to increase the trust and confidence of mentees and mentors and start

generating the proper environment. Activities preferentially will be done out of the academic/work environment and will have a variable duration (i.e. one or few hours during lunchtime or a few days sharing 24h lifetime in a rural environment).

- **Periodic formal meetings** (Figure 4 C). It is important to establish a few formal meetings in which important tasks for mentoring will be described: goal setting (i.e. work together to establish clear and achievable goals for the mentee) and/or skill development (i.e., identify specific skills or areas of knowledge that the mentee wants to develop).
- **Feedback and Reflection.** During formal or informal meetings, providing constructive feedback to the mentee and encouraging them to reflect on their experiences, actions, and outcomes, fostering a sense of self-awareness and continuous learning.
- **Shadowing.** Arrange opportunities for the mentee to observe and shadow the mentor in his/her professional activities. This can include attending meetings, presentations, or events and providing them with insights into the mentor's decision-making processes and approaches.
- **Role-Playing.** Engage in role-playing exercises where the mentees can practice and refine their skills in a safe and supportive environment. This can involve scenarios related to communication, problem-solving, negotiation, or other relevant areas.
- **Interdisciplinary group meetings and projects** (Figure 4D). To share mentees' expertise, interdisciplinary meetings with other mentees and mentors can help the mentoring process in terms of visualising the progress made, mutually sharing feedback with other mentees and self-motivation of mentees.

- **Real-life working panorama.** It is recommended to introduce mentees to working mates to expand their connections and build new relationships with professional staff related to similar disciplinary interests. Moreover, encourage mentees to participate in professional events, such as industry events, conferences, or workshops, to broaden their horizons.
- **Mock Interviews.** Prepare mentees for actual live interviews, either for a job application (job interview) or project description (i.e. briefly telling projects to investors in an elevator pitch format).



Figure 5.4. Examples of activities during mentoring relationships.

5.6. Conclusions

Mentees and mentors have diverse knowledge, skills, personal behaviour and perspectives. Here, it has been exposed how this diversity can be exploited and possible activities to improve the relationship built. However, as with any personal relationship, it will depend on the commitment to the process and the coherence of expectations of both parties.

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6: In-person versus virtual mentoring

6.1. The meaning of Mentoring in Green Biotechnology Entrepreneurship

Before detailing the specific aspects of in-person versus virtual mentoring (Saheed, 2022), we need to recall some essential details again. First of all, the mentor in green biotech entrepreneurship must have good knowledge in biotechnology and excellent knowledge in entrepreneurship. Second, the mentor's experience plays a decisive role in the success of the mentoring sessions. Thirdly, the mentee must want to learn more and develop their skills in entrepreneurship and be a good or even very good practitioner in green biotech. Finally, each of the two parties must be fully involved in the mentoring activity, be willing to make compromises, when necessary, to ensure the success of the activity and the achievement of the desired results and, last but not least, be willing and wishing to develop personally.

Mentoring plays a crucial role in entrepreneurship (Memon et al., 2015), especially in emerging fields such as green biotechnology. In this area, the mentor provides guidance and support to aspiring entrepreneurs interested in starting ventures focused on sustainable and environmentally friendly biotech solutions.

6. 2. Key points to be considered

There are eight key points (KP) to consider when the mentoring sessions intersect with entrepreneurship, green initiatives, and biotechnology (The Green Mentor Handbook, 2015).

KP1 Understanding Green Biotechnology

Both the mentor and the mentees must familiarise themselves with the principles, applications, and challenges of green biotechnology, especially since it is not mandatory for the two parties involved to be experts in this field. This field encompasses biotechnological processes,

techniques, and products to develop sustainable solutions for agriculture, energy production, waste management, and more. Moreover, those who get involved in mentoring activities in green biotech must stay updated with the latest advances and emerging trends in green biotechnology.

KP 2 Identify Potential Entrepreneurs

To develop green biotech mentorship activities, the mentor must seek out individuals passionate about both entrepreneurship and sustainability. He/she must look for those with a solid scientific background, a deep understanding of biotechnology, and a genuine interest in addressing environmental challenges. For this reason, the mentor must be actively engaged with university research programmes, environmental organisations, and biotech communities to find promising candidates.

KP 3 Goal Setting and Planning

The mentor's purpose is to help aspiring entrepreneurs define their goals and objectives. The mentor must encourage them to identify specific environmental issues they aim to tackle with their biotech venture. The mentor must assist them in formulating a comprehensive business plan that outlines their vision, market analysis, competitive advantage, and strategies for sustainable growth.

KP 4 Access to Resources

The entrepreneurs must be guided in navigating the ecosystem of resources available to green biotech startups. This could include research grants, incubators, accelerators, industry networks, and government initiatives that support sustainable entrepreneurship. One of the most important roles of the mentor is to provide insights into fundraising strategies, including potential investors or grant opportunities with a focus on environmental sustainability.

KP5 Technological Expertise

The mentorship programmes in this area support entrepreneurs in developing a deep understanding of biotechnological concepts and techniques relevant to their venture. They must be guided in choosing the appropriate technologies and methodologies, such as genetic engineering, enzyme engineering, or bioinformatics, depending on their specific goals. Another thing is that the mentor should help the entrepreneurs in green biotech to develop connections with experts and professionals in the field for technical advice and mentorship.

KP6 Sustainable Business Models

Entrepreneurs must be encouraged to integrate sustainable practices throughout their business models. They must be helped to explore strategies for minimising environmental impact, such as reducing waste generation, optimising energy consumption, or implementing circular economy principles. Also, they must emphasise the importance of ethical and socially responsible practices in all aspects of their venture.

KP7 Networking and Partnerships

It is mandatory to foster connections between entrepreneurs and relevant stakeholders in the green biotech industry. Both mentors and mentees should participate in conferences, workshops, and events to facilitate networking opportunities. The entrepreneurs must be introduced to potential partners, collaborators, and mentors who can provide additional guidance and support.

KP8 Overcoming Challenges

Entrepreneurship is often accompanied by numerous challenges. Thus, the entrepreneurs must be helped to anticipate and navigate obstacles specific to the green biotech sector, such as regulatory compliance, intellectual property protection, scalability, and market acceptance. A mentor in green biotech entrepreneurship must share

his/her own experiences and lessons learned to inspire resilience and determination.

As we can see from the above, mentoring is an ongoing relationship, and the mentor's support should extend beyond the initial stages of the venture. By guiding aspiring entrepreneurs in green biotechnology, a mentor can contribute to developing innovative and sustainable solutions to address pressing environmental issues.

In addition, there is a life cycle of mentoring activity/sessions (Figure 6.1), which can be applied regardless of the field (Memon et al., 2015).

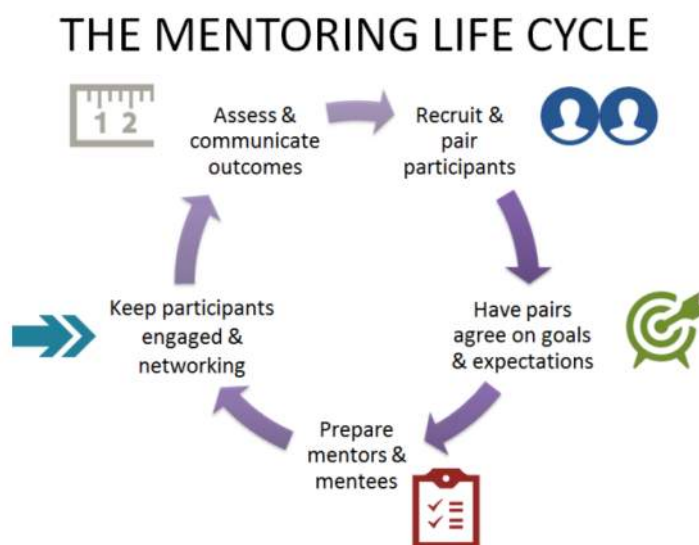


Figure 6.1. Basic elements of mentoring life cycle

Source: <https://images.app.goo.gl/dhGuzuJn7qiApRSo8>

We specify that for the results obtained to be the desired or planned ones, and the objectives in mind to be achieved, this life cycle must be customised for each individual sector. We must not forget that through mentoring, knowledge and skills can be shared, experience can be exchanged between participants, and the main objective of

a mentoring programme is to help the mentees develop professionally and personally (The Green Mentor Handbook, 2015).

Also, after each mentoring activity, the mentor will come out enriched with new knowledge, skills, and experiences, which he can use successfully to perfect himself and continuously increase the quality of his activity.

6.3. Conditions for a successful In-person/face-to-face (F2F) or Online mentoring

The mentoring activity has a well-defined purpose, namely, to help the mentees to accumulate the necessary knowledge for what they want to undertake, to develop the skills they have, to acquire new skills and to succeed in acting independently in future activities in the field which they chose (Saheed, 2022).

Therefore, not every mentoring program fulfils its purpose. If the mentioned aspects are not fulfilled, we can conclude that the mentoring activity was missed and the desired results were not achieved. To avoid the failure of a mentoring activity, some elements must be considered.

Figure 6.2 identifies the main stages that must be completed, regardless of whether it is an Online mentoring activity or an In-person one (face-to-face – F2F).



Figure 6.2. Steps for a successful mentoring program

Source: <https://images.app.goo.gl/LatcKChyMkMR8eVaA>

In other words, there are other aspects that should be considered. Not everyone can be a mentor in any field (Memon et al., 2015). To be a successful mentor, the person must know exactly what activities they excel in and in which field/fields they can offer helpful advice and competent help.

In order to offer mentoring in green biotech, mentors must look for the opportunities they may have to offer their services, persons or entities that want to develop entrepreneurial activities in the field. In order to be a good mentor in green biotech entrepreneurship, it would be a useful experience that before actually starting to offer mentoring services, the person should look for mentoring programmes in which to perform this activity voluntarily to accumulate the necessary experience. These mentorship programmes can be found both online and offline.

Those looking for a mentor should seek someone with experience in entrepreneurship or green biotechnology. Networking events, industry conferences, and online platforms can be good places to find potential mentors.

A very important thing is that when you want to run a successful mentoring programme (Shrestha et al., 2009), the scope and expectations of the mentoring relationship must be clearly defined to ensure both parties are on the same page. Also, it is essential to remember that effective mentoring requires patience, active listening, and providing constructive feedback.

Starting and running a successful business in green biotech can be challenging but very rewarding, compared to other industries. Furthermore, here we can mention some small tricks to make the business attractive enough for the entrepreneur to want to take the

risk, and for the mentor to be able to say at the end that he has successfully fulfilled his role.

First, both the mentor and the mentee must ensure that the business idea solves a real problem or meets a specific need in the market. Above all, the entrepreneur must be oriented towards realising market research and encouraged to gather feedback from potential customers.

Then, the business model, target audience, marketing strategy, financial projections, and growth plans in a well-structured business plan must be pencilled in. Moreover, the entrepreneur must surround him/herself with talented and motivated individuals who complement their skills and share their vision. The entrepreneur must be invited to explore various funding options, such as bootstrapping, angel investors, venture capital, or government grants, to secure the necessary capital for the venture.

Both the mentor and the mentee must be prepared to adapt to changing market conditions and be open to pivoting if necessary, and stay updated on industry trends, best practices, and new technologies to remain competitive (The Green Mentor Handbook, 2015).

We must remember that green biotechnology involves using biological systems and organisms to develop eco-friendly solutions for various challenges. In the context of entrepreneurship, green biotechnology can offer opportunities to create sustainable products or processes that benefit the environment.

There are many areas within green biotechnology that might be considered for mentorship. Some of them are mentioned in Table 6.1.

Table 6.1. Areas within green biotechnology to be considered for mentorship

No	Area	Activities that might be developed
1	Bioenergy	Explore the development of biofuels and renewable energy sources derived from organic materials.
2	Agriculture and Sustainable Farming	Investigate ways to improve crop yields, reduce chemical inputs, and enhance agricultural practices using biotechnology.
3	Bioremediation	Consider solutions that use microorganisms to clean up pollution and restore ecosystems.
4	Biodegradable Materials	Develop biodegradable plastics and materials to reduce waste and plastic pollution.

Source: online research

The main idea that we must remember is that the key to success in entrepreneurship and green biotechnology is innovation, a passion for sustainability, and a dedication to positively impacting the environment.

Those who want to enter the field of green biotech entrepreneurship and achieve performance, including in mentoring activities, must always be open to learning, collaborating with others and adapting or changing their approach as needed. We mention that there are several ways in which a mentoring program can be offered, but taking into account the objective of this chapter, we will consider two main ways, namely In-person (face-to-face – F2F) Mentoring and Online Mentoring, which will be detailed in what follows (Shrestha et al., 2009).

6.4. F2F Mentoring

In general, F2F Mentoring is considered to be a traditional way of carrying out mentoring activities, in which the two parties (the mentors and the mentees) interact directly, either in one-on-one meetings (Figure 6.3) or in group meetings (Figure 6.4).



Figure 6.3. F2F Mentoring One-on-One

Source: <https://images.app.goo.gl/wCM5i3sD2nidYQH89>

Thus, F2F Mentoring involves experienced entrepreneurs providing guidance, support, and knowledge transfer to individuals or teams looking to start or develop their own businesses, with a particular focus on the green and biotech sectors (The Green Mentor Handbook, 2015).

Next, we will present some aspects regarding the definition of mentoring, techniques that can be applied/used, benefits, disadvantages, and the role of F2F Mentoring (Memon et al., 2015) in green and biotech sectors.

One of the most important aspects is that F2F Mentoring in green biotech entrepreneurship involves the direct interaction between

mentors and mentees in physical settings, such as offices, meeting rooms, or other designated spaces.

We are talking about a personalised approach where mentors share their expertise, experiences, and advice to help mentees navigate the challenges of entrepreneurship and business development.



Figure 6.4. F2F Mentoring in a Small Group

Source: <https://images.app.goo.gl/RCMx3CDLeKmGLsATA>

Some techniques can be applied so that the results of a mentoring activity are as expected (Shrestha et al., 2009):

- ✓ Firstly, mentors and mentees must schedule regular face-to-face meetings to discuss progress, challenges, and goals.
- ✓ Secondly, the mentors should provide guidance, insights, and industry-specific knowledge to help mentees make informed decisions.
- ✓ Thirdly, mentors should offer skill-building opportunities, such as workshops, training sessions, or shadowing experiences, to enhance the mentees' entrepreneurial abilities.

- ✓ Fourthly, mentors should facilitate introductions and connections to their networks, expanding mentees' access to resources, potential partners, investors, or customers.
- ✓ Finally, mentors should provide constructive feedback, hold mentees accountable for their actions, and help them identify areas for improvement.

F2F Mentoring has many advantages. Some of the most important ones are presented below:

- ✓ The direct meeting between the two parties (the mentor and the mentees) allows for easier and faster personalisation of the mentoring programme because the needs can be identified more precisely, and any errors in identifying the needs can be corrected on the spot.
- ✓ The possibility of creating solid collaborative relationships based on trust, which can later develop into other mentoring programmes and other types of collaborations beneficial for future activities.
- ✓ In an F2F meeting, non-verbal communication can be made much easier, so both partners can notice non-verbal 'signals', infer valuable information from body language and improve their interpersonal skills.
- ✓ As a rule, the mentees need to quickly solve their problems and quickly understand what they have to do. The mentor's presence facilitates obtaining valuable information and necessary advice in real time.
- ✓ The F2F interaction in the mentoring sessions offers the opportunity to quickly interconnect with various personalities from the targeted field of activity, or with other entrepreneurs active in that sector.

To the same extent, like any type of activity, F2F Mentoring also has disadvantages, such as:

- ✓ One of the biggest disadvantages of F2F Mentoring in green biotech entrepreneurship is that the mentor and the mentees are often at great distances from each other. The more special the field, such as that of green biotech entrepreneurship, the more the distance increases, and direct interaction can be more difficult.
- ✓ Difficulties often arise in matching the schedules of the participants in the mentoring programmes, which can lead to delays, exceeding deadlines in achieving the desired results, finding the necessary space, and other logistical problems.
- ✓ Considering the specificity of entrepreneurship in green biotech, it is very difficult to find the right mentor because, at least for now, the number of people with the skills and knowledge to deliver such a programme is very small.
- ✓ F2F meetings are usually expensive, so not many entrepreneurs can afford them. In the category of costs associated with this activity, we can include accommodation and transport expenses, or renting the necessary spaces.

In the green and biotech sectors, due to their technical complexity, regulatory requirements, and specialised knowledge, F2F Mentoring is particularly valuable. Mentors with expertise in sustainable practices, renewable energy, or biotechnology can provide hands-on guidance to mentees in these sectors. They can help mentees navigate the unique challenges of developing environmentally friendly businesses, complying with regulations, securing funding, and leveraging emerging opportunities.

F2F Mentorship in green biotech entrepreneurship offers personalised guidance, relationship building, and real-time problem-solving opportunities. While it has some limitations, such as geographical constraints and higher costs, it remains a valuable approach, particularly in sectors like green and biotech, where specialised knowledge and hands-on support are crucial for success.

The advice that can be offered in real-time, the well-targeted discussions that can take place, and the demonstrations that the mentees can participate in can have a decisive role in starting and successfully running a business in the green biotech sector.

6.5. Online mentoring

Online Mentoring in entrepreneurship refers to providing guidance, advice, and support to individuals (Figure 6.5) or groups (Figure 6.6) interested in starting or growing their own businesses. It involves a mentor, an experienced entrepreneur or business professional, who shares his/her knowledge, expertise, and network with mentees through online platforms such as video calls, emails, or chats (Khan & Gogos, 2013).

If we were to give a definition (McKevitt & Marshall, 2015), Online Mentoring in green biotech entrepreneurship is a virtual relationship between a mentor and a mentee, where the mentor provides guidance, support, and advice to help the mentee develop his/her entrepreneurial skills, overcome challenges, and achieve his/her business goals.



Figure 6.5. Online Mentoring One-on-One

Source: <https://images.app.goo.gl/dubYG39pMACvsJay8>

In practice several techniques (Table 2) can be used to have a successful mentoring session.

Table 6.2. Techniques to be used for a successful Online Mentoring

No	Area	Activities that might be developed
1	Goal Setting	Mentors help mentees define their goals and develop a plan of action to achieve them.
2	Knowledge Sharing	Mentors share their expertise, experiences, and industry insights with mentees, helping them gain valuable knowledge.
3	Feedback and Accountability	Mentors provide feedback on the mentees' progress, offer constructive criticism, and hold them accountable for their actions.
4	Networking	Mentors help mentees expand their professional network by making introductions and providing connections to potential partners, investors, or customers.

5	Problem-Solving	Mentors assist mentees in identifying and resolving business challenges, providing guidance on decision-making and problem-solving strategies.
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Source: Macafee, 2008.

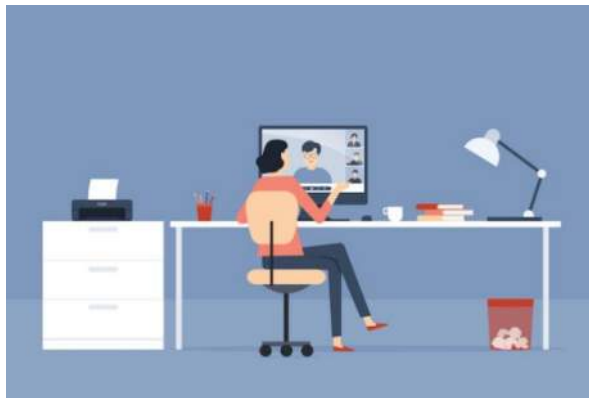


Figure 6.6. Online Mentoring in a Small Group

Source: <https://images.app.goo.gl/DBGCFcmvVXLUaba8>

Moreover, concerning Online Mentoring, both advantages and disadvantages can be distinguished (Griffiths & Miller, 2005).

Among the benefits of Online Mentoring in green biotech entrepreneurship, we list:

- ✓ Mentees gain insights (knowledge) and learn from the mentor's experience, avoiding common pitfalls and accelerating their learning curve.
- ✓ Mentees receive personalised advice and guidance tailored to their specific needs and business goals.
- ✓ Mentees can leverage the mentor's network, opening doors to new opportunities, partnerships, and resources.

- ✓ Mentors provide motivation, encouragement, and emotional support, boosting the mentees' confidence and resilience.
- ✓ Online mentoring allows mentees to access guidance and support from mentors regardless of their geographical location and provides flexibility in scheduling sessions.

Some of the most important disadvantages of the Online Mentoring in green biotech entrepreneurship are (Khan & Gogos, 2013):

- ✓ Online Mentoring lacks the in-person connection and non-verbal cues that can be important for effective communication and relationship building.
- ✓ Technical issues or poor internet connectivity can disrupt online mentoring sessions and hinder the flow of communication.
- ✓ Online Mentoring may lack the personal connection that can be established through face-to-face interactions, potentially affecting the depth of the mentoring relationship.
- ✓ Mentors and mentees from different time zones may face challenges finding mutually convenient meeting times.
- ✓ Relying on online platforms for mentoring means being susceptible to technical glitches, cybersecurity concerns, and potential privacy risks.

Online Mentoring can be specifically tailored to focus on green entrepreneurship and biotechnology (Khan & Gogos, 2013).

Mentors in these fields can guide sustainable business practices, eco-friendly technologies, and navigating the unique challenges of the green and biotech sectors.

They can share knowledge about regulatory compliance, research and development, fundraising strategies, and industry trends specific to green and biotech ventures.

Finally, online mentoring in green biotech entrepreneurship offers numerous benefits by providing aspiring entrepreneurs with guidance, expertise, and support to help them succeed in their business endeavours.

6.6. How do we choose which is more suitable, F2F Mentoring or Online Mentoring?

The choice between F2F Mentoring and Online Mentoring (Shrestha et al., 2009) in green biotech entrepreneurship depends on various factors and needs to be considered on a case-by-case basis.

Some factors influencing the choice when deciding which approach is more suitable will be presented in the following (McKevitt & Marshall, 2015).

The first factor refers to the nature of the mentoring relationship. This means that we must pay attention to the specific goals and requirements of the mentoring relationship. Some mentoring relationships may benefit more from F2F interactions, while others can be effectively facilitated through Online means.

The second factor concerns the geographic constraints. F2F Mentoring may be more appropriate when the mentor and mentee are located nearby, making it convenient to meet in person. Online Mentoring can overcome geographical limitations, allowing mentors and mentees to connect regardless of their physical locations.

Thirdly, Online Mentoring offers greater accessibility, especially for individuals with mobility limitations or located in remote areas. It allows mentors and mentees to connect from anywhere with an internet connection, expanding the pool of potential mentors and mentees.

The fourth factor considers flexibility and convenience because Online Mentoring provides flexibility regarding scheduling and eliminates the

need for travel time. This can be beneficial when participants have busy schedules or limited availability. F2F Mentoring may require more coordination and time commitment due to travel and scheduling constraints.

Another aspect not to be neglected is the communication preferences. As we all know, some individuals may feel more comfortable and engaged in F2F interactions as they allow for non-verbal cues and immediate feedback. Others may prefer online platforms that offer asynchronous communication, allowing participants to engage at their own pace and convenience.

Sixthly, a decisive role when deciding which approach is more suitable (F2F Mentoring or Online Mentoring) is played by the nature of the mentoring content, with reference to the type of mentoring content being exchanged. F2F Mentoring may be more effective for practical skills that require hands-on demonstrations or physical presence.. Online platforms can be suitable for knowledge-sharing, goal-setting, or advice-based mentoring.

Lastly, we would like to refer here to the technology proficiency, and the assessment of the technical capabilities and comfort levels of both the mentor and mentee. Online Mentoring requires basic technology skills and access to appropriate tools. If either party lacks the necessary technology proficiency, F2F mentoring might be more suitable.

It is important to note that a hybrid approach can also be considered, where face-to-face and online mentoring methods are combined to leverage the advantages of both approaches (The Green Mentor Handbook, 2015). Ultimately, the choice depends on the specific circumstances, preferences, and goals of the mentoring relationship.

6.7. Conclusions

As we can see, there are many points of view, elements that must be taken into account and questions that we can ask ourselves (or ask others) when approaching the topic of mentoring activities in green biotech entrepreneurship. What does mentoring mean in this field? What techniques can be used? What type of mentoring is right? F2F, Online, or Hybrid? One-on-one or in Small Groups? What are the advantages or disadvantages of each? (Griffiths & Miller, 2005).

Both F2F Mentoring and Online Mentoring can be valuable for green biotech entrepreneurship, but the suitability depends on various factors. Next, we present some of the most relevant conclusions regarding the mentoring activity in green biotech entrepreneurship (Khan & Gogos, 2013).

On the one hand, green biotech entrepreneurship often requires specialised knowledge and expertise. F2F Mentoring can provide an opportunity for in-depth discussions, hands-on demonstrations, and personalised guidance, making it suitable for complex scientific concepts or technical aspects of green biotech. It allows mentors to physically engage with equipment, experiments, or prototypes, which can be crucial in certain scenarios.

On the other hand, F2F Mentoring can provide valuable networking opportunities, which is very important because, in green biotech entrepreneurship, connections with industry professionals, investors, or potential collaborators can play a significant role. F2F interactions allow for organic networking, attending industry events or conferences together, and introductions to relevant contacts.

In other words, green biotech often involves laboratory work and experimentation. In this respect, if the mentor has access to specialised lab facilities, F2F mentoring can be beneficial. It allows mentees to

observe and learn from practical experiments, gain hands-on experience, and access resources that may not be available online. Also, if the mentor and mentee are located in close proximity and have access to local green biotech ecosystems, F2F Mentoring can provide a unique advantage. Proximity allows for direct engagement with local industry clusters, research institutions, or green biotech initiatives, fostering a deeper understanding of the local landscape. Regarding the Online Mentoring (Macafee, 2008), it can offer flexibility and scalability advantages. It allows access to a broader pool of mentors who may not be geographically close, increasing the chances of finding a mentor with specific expertise in green biotech. Online Mentoring can also accommodate busy schedules, as it eliminates the need for travel time and allows for asynchronous communication.

If the focus of the mentoring is more business-oriented, such as developing a business plan, marketing strategy, or fundraising, Online Mentoring can be effective. Business-related discussions and knowledge-sharing can be easily facilitated through video calls, emails, or online platforms, regardless of location.

In conclusion, while F2F Mentoring offers certain advantages regarding specialised knowledge, networking, and access to lab facilities, Online Mentoring can provide flexibility, scalability, and access to a broader range of expertise (Shrestha et al., 2009). A combination of both approaches, tailored to the specific needs of the green biotech entrepreneur, can be the most suitable solution.

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7: DevGood practices – case studies of biotech green mentorship

7.1. Alina Nanu – Evic Product Testing Romania

By no means of wanting to become an entrepreneur, Alina Nanu built her career based on the principles that rule her life: no compromise, fair play and the confidence that any limit can be overcome. Continuous education, hands-on experience, and personal example hold significant importance for her, alongside the belief that one can



never know everything and that every person is valuable and capable of proving themselves in the right place. She placed immense trust in respecting everybody's needs. Her entrepreneurial models are Bill Gates and Marie Curie.

She began her biotechnology research journey within a pharmaceutical company, where her two passions - chemistry and computers - were harmoniously blended. It was during this time that she discovered a niche in the market and the opportunity to become a trailblazer in clinical research of cosmetics conducted at the highest level within the framework of existing international regulations.

7.2. Ionut Moraru – ProNatura



Ionut Moraru, a doctor in medicine with expertise in acupuncture and apiphytotherapy, graduated from the University of Medicine and Pharmacy "Carol Davila" in Bucharest in 1982. While the prevailing aspiration for medical graduates at the time was to pursue surgery, he was equally captivated by Traditional Chinese Medicine (acupuncture, apiphytotherapy), as well as other fields such as geriatrics and gerontology. His guiding principle as a doctor has always been to alleviate the suffering of others by any means necessary.

In his business endeavors, fairness and the pursuit of creating new practical and innovative products have been fundamental principles. He finds joy in meeting new people and exchanging valuable ideas. While he didn't have a specific successful entrepreneur to emulate, he was fortunate to have influential figures in his life, including Anatomy professor Cezar Niculescu, Mr. Nicolae Iliesu (the inventor of Apilarnil), and Chinese Master Wang. These individuals played significant roles in shaping his passion for life sciences and spirituality.

Ionut Moraru considers education and self-motivation as crucial legacies to pass on to his two children, Rares and Radu. He believes in empowering them to succeed in life through their own efforts and abilities.

7.3. Irinel Proca – Laboratorium Life Science

Irinel Proca is married and has one child. His academic pursuits have led him to attain a Diploma in Ecology, a Master's degree in Ecology, and he is currently pursuing a third-year Ph.D. in Biotechnology. He places great value on the importance of a job well done, with respect and trust being his core values.

In his personal life, he believes in trusting his

partner and family and accepting them as they are, considering this to be the most important guiding principle.

In business, his guiding principle is to respect his business partners and maintain transparency with them, understanding that mutual respect is crucial for building long-term relationships. He doesn't adhere to a specific entrepreneurial model for inspiration but rather seeks to learn from the people he encounters, applying values that are relevant to the specificities of his business.



7.4. Gianluca Cavalaglio – BioViridis SRL



Gianluca Cavalaglio is an environmental engineer who pursued a Ph.D. in Energy Engineering, providing him with the opportunity to delve deeper into biotechnology issues. With over a decade of experience, he serves as a researcher at the Centro di ricerca sulle biomasse (Research Centre on Biomasses),

focusing on bioenergy and biofuels.

The enterprise he co-founded a year ago is distinguished by its strong synergy with the University. This collaboration has proven invaluable in overcoming various obstacles, such as initial investments. Thanks to the facilitated rates at which the University rents out research and analysis laboratories, as well as other spaces, these investments have been amortized effectively.

7.5. Francesco Valigi – Genelab



Francesco Valigi acknowledges that there is no singular blueprint for the perfect entrepreneur, nor is there a single approach to conducting business. Embarking on a journey marked by innovation, analysis, and critical thinking, he and his team began studying and interpreting technical knowledge initiatives. They engaged in intensive weekly courses focused on the biotechnology sector, employing innovative and multi-disciplinary teaching and learning methods. Additionally, they acquired a range of relational skills crucial for navigating the complexities of the business world, emphasizing critical and lateral thinking.

While it's commonly said that anyone can become an entrepreneur, he recognizes that success in entrepreneurship requires a combination of innate potential and cultivated skills. He believes in leveraging personal experiences, drawing from his upbringing in Perugia and interactions with companies in Milan's biotechnology sector. Witnessing the dedication and challenges faced by these companies inspired him to venture into the biotechnology sector himself.

Despite initial skepticism, he decided to participate in a grant call, recognizing the potential opportunities it presented. Upon learning of his eligibility for funding, he proceeded to acquire the necessary equipment and resources to commence selling biotech products, marking the beginning of his entrepreneurial journey.

7.6. Carles Cortes – CactusLoft

CactusLoft came into existence in 2010, but the dream of establishing a company dedicated to acquiring and disseminating new cactus varieties for collectors had been brewing since childhood. At the age of 13, Carles Cortes began collecting cacti and experimenting with crossbreeding species, laying the groundwork for his own selection of unique cacti. His guiding motto became "work on what you like and you will never have to 'go to work.'"



With the support of his parents, who encouraged him to pursue his passion, he gradually expanded his collection and production. Eventually, they suggested turning his hobby into a livelihood, leading to the birth of CactusLoft.

To manage his business independently, he delved into learning sales negotiation, management skills, and digital marketing. His father, with extensive experience in the business world, served as his invaluable mentor.

He considers himself a multitasker within his business, adhering to the principle that success follows hard work. He finds inspiration in the gradual evolution of his business rather than emulating a specific successful entrepreneur.

As a cactus grower, he continually seeks out new varieties, cultivars, and unique forms to offer his customers. His efforts to obtain plants with distinctive characteristics led him to apply in vitro culture techniques,

leveraging his expertise as a Doctor in Biotechnology. This shift transformed CactusLoft from a conventional cactus nursery into a biotech company dedicated to developing new cactus varieties, yielding promising results.

7.7. Anda Burcea – Alchimie



Anda Burcea mother's illustrious career in wine microbiology and genetics served as an early inspiration for her. As a child, she found herself captivated by experimentation, often concocting mixtures of flower petals and plant roots reminiscent of a laboratory in her

grandmother's bathroom.

After completing high school with a focus on foreign languages, she initially pursued studies in political science but soon realized it didn't align with her temperament. She redirected her interests towards environmental policies, earning a Master's degree in Environmental Biotechnology at USAMV Bucharest and another in Environmental Management at ULB Brussels.

Combining her skills in informatics with a passion for video games, she embarked on a career at UBISOFT, quickly rising to the role of area team leader. Later, an MBA in Internet and Multimedia from Paris led her to a position as a production assistant on a television show at the

Belgian national RTBF station. Despite her initial interest in the video game industry, she found it less developed in Belgium, prompting her to seek new avenues.

Recalling her childhood passion for nature and experimentation, she was inspired to establish her own spa business, specializing in cosmetic products. She underwent training in apiculture skin-cosmetic products under specialists from Romania and Germany, eventually launching an urban spa named "Alchemie."

Today, her spa boasts a loyal clientele seeking natural treatments based on bee products, herbal extracts, fruit acids, and more. Over the past three years, she has worked tirelessly to develop a range of natural creams with detoxifying properties, soon to be launched under the Alchemie brand, which has already been registered in the Benelux.

Hailing from a family of university professors dedicated to agricultural research across generations, she views her entrepreneurial efforts as a continuation of this scholarly tradition. Her guiding principle in personal life is "If you want to change something, don't be passive - work!" In business, she adheres to the motto "When you want to do something, learn from mistakes and do not give up. In business, there are no failures, only experiences that show you the way. If you abandon hope, you will not find the solution."