



Mr. Tony

Commercial Plan

Catalogue

1.	Project Description	1
1.1	Project background	1
1.2	Project Overview	2
1.3	Team profile	3
2.	Product services	5
2.1	Project positioning	5
2.1.1	Project technology	5
2.1.2	Project advantages	6
2.2	Product function	7
2.2.1	Product type and introduction	7
2.2.2	Product effect	9
2.3	Target user	10
2.4	Business model	10
2.4.1	Business model structure	10
3.	Market prospects	12
3.1	Industrial background and market demand	12
3.2	Competition strategy	13
3.3	Development prospects	15
3.4	Main intellectual property rights	16
4.	Financial operations	17
4.1	Financing situation	17
4.2	Profit model	18
4.3	Financial management	19
4.4	Risk avoidance	20
4.4.1	Market risk	20
4.4.2	Business risk	21
4.4.3	Financial risk	21
5.	Competitive advantage in the same industry	错误!未定义书签。
5.1	Cost advantage	错误!未定义书签。
5.1.1	Policy advantage	错误!未定义书签。
5.1.2	Resource advantage	错误!未定义书签。
5.2	Product advantages	错误!未定义书签。
5.2.1	Safety and technical advantages	错误!未定义书签。
5.2.2	Product advantages	错误!未定义书签。
5.3	Brand advantage	错误!未定义书签。
6.	Team quality	错误!未定义书签。
6.1	Personnel composition	错误!未定义书签。
6.2	Qualification background	错误!未定义书签。
6.3	Team environment	错误!未定义书签。
6.4	Team system	错误!未定义书签。
6.5	Equity composition	错误!未定义书签。
7.	Social benefits	错误!未定义书签。

- 7.1 Promote the health of perm and dyed hair, and maintain consumer safety
错误!未定义书签。
- 7.2 Biotechnology makes consumers to perm their hair more accurate and
convenient..... 错误!未定义书签。
- 7.3 Cause perm dyeing reform, promote the iteration of the hairdressing
industry..... 错误!未定义书签。
- 7.4 Drive the development of surrounding industries and extend the fashion
industry chain 错误!未定义书签。
- 7.5 Make science and technology close to the people, and truly achieve
innovation to change life 错误!未定义书签。

1. Project Description

1. 1 Project background

As the living standards of Chinese society improve and people begin to spend more time and money to invest in themselves, the hairdressing salon industry is becoming more and more popular, and the scale is rapidly expanding.

By the end of 2019, the size of Chinese hairdressing industry reached 351.26 billion yuan; it is expected that the market will maintain a compound growth rate of 4.6% in the next five years, and will exceed 400 billion yuan by 2022. However, the investigation found that in the produce of hair dye cream, hair cream, in order to achieve the ideal effect, hydrogen peroxide, sulfhydryl acetic acid and other high reducing or high oxide substances are often over-added , although in order to achieve good coloring effect and maintain the durability of color and curl, the addition of these substances is necessary, but it will inevitably cause great harm to the hair and even the body.

At the same time, in the production process of chemical principles, a lot of waste will be discharged into the water, causing a serious impact on the water environment and water quality; and the waste may contain a certain amount of heavy metal ions, sulfide and lead compounds, which will evaporate into the air after oxidation. On the other hand, it may be discharged into the drain, and will be highly likely to invade the body by breathing or daily water. Because of this, these chemical pollutants could easily make people suffer from some chronic diseases,

and even lead to human poisoning, cancer, and ultimately, death. At the same time, when applied to hair, due to the complex chemical composition of hair dye and perms, people are suffering from allergy, edema and even shock in recent years.

The plant dyes are extracted from natural plants. According to incomplete statistics, there are hundreds of plants which could be used as resource of pigment extraction. The structure of the pigment is mainly consisted of carotenoids, α -nathalquinone, anraquinone and indigo. These types of dyes are non-toxic and harmless, having natural color, and even maintenance effect on hair. All these raw materials are renewable and have been widely used in the industry. It is clear that plant pigment has a broad development prospect in the domestic high-end market. However, due to the complex traditional plant dyeing process, poor coloring and high cost, the current situation of related enterprises is not optimistic.

1. 2 Project Overview

With the gradual enrichment of social material conditions and spiritual culture, people have higher requirements for the diversity of hair styles. There is no doubt that a more convenient and healthier perm and dye is needed by the market. This project is proposed to use synthetic biology methods to synthesize short peptides and three pigments in commonly used yeast expression systems. Short peptides can change disulfide bonds to change the curvature of hair and straight hair. Indigo, curcumin and tomato red can be paired in a variety of colors and biodegradable with minumum damage.

The project product design is diversified and currently has Mr. Tony small tank, with a small fermentation tank as the template, the bacterial product separation, safe and convenient; Mr. Tony vial, with hair dye cream as a template, easy and quick. In addition, we also have a color palette small program, you can freely choose the hair dye color, do it on your own, not only healthy but also very interesting.

1.3 Team profile

The team is composed of Gu Daining, Liu Xinmin, Zhang Yuzhu, Cheng Mingyuan and Liu Chaoran. All of whom are from the iGEM HUST-China team, of Huazhong University of Science and Technology. Many of whom have participated in the synthetic biology competition for many years. This team has strong cooperation ability, high tacit understanding degree, strong expert mentor strength, advanced management system, and good team environment.

Relying on Huazhong university of science and technology, Qiming institute, Institute of Environmental Resources Microbial Technology, Institute of Energy, Biotechnology and Ecology, life science innovation base, and invited deputy secretary of life college —— associate professor Zhan Yi (guide domestic and foreign discipline competitions, having been rewarded dozens of gold and silver medals) and vice dean, deputy director of the Ministry of molecular biology key laboratory professor Yan Yanjun (responsible for a number of national major strategic projects, total funds of ¥200 million) as the team instructor, respectively

to provide innovation entrepreneurship guidance and professional technical guidance.

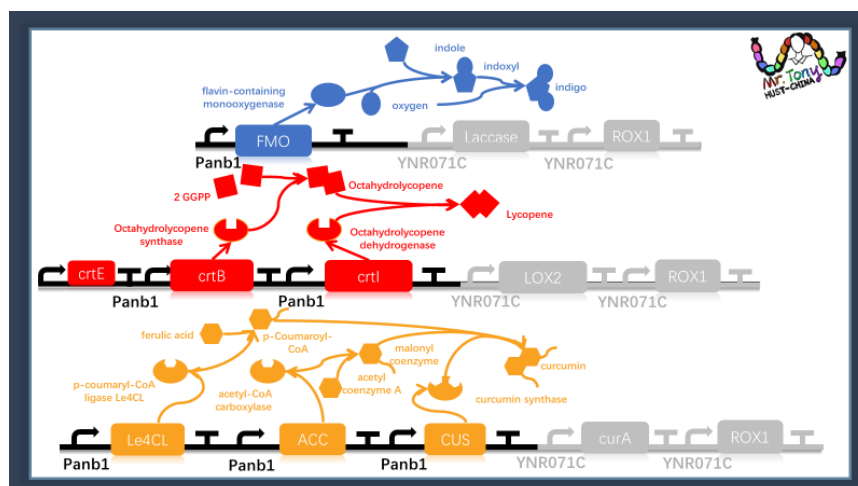
Relying on the two platforms of the Institute of Environmental Resources and Microbiology Technology and the Institute of Energy, Biotechnology and Ecology, the team has complete experimental equipment. The start-up funds are jointly borne by the college, the experimental platform and the iGEM team.

2. Product services

2. 1 Project positioning

2. 1. 1 Project technology

Dyeing: Our engineered yeast produces enzymes that convert natural pigment precursors into pigments which could be used for hair dye, such as lycopene, curcumin, and indigo. Add red, yellow, and blue in the preset order and proportion, and we can get the hair colors we want with minimal damage to health. Our engineered yeast can also express short peptides which at normal pH cross the cuticle and enter the cortex to form new disulfide bonds with α -keratin as the hair fibers bend, thereby changing the shape of the hair. This process can be regulated by the concentration of xylose. If the xylose concentration exceeds the threshold, the engineered yeast will release material to restore the original state of the hair.



graph 1 Mr.Tony hair dye pathway

Perm: The main cause of hair damage in the traditional perm is the strong basic material needed to open the hair skin. To reduce damage to hair during the perm,

short peptides were used as a reducing agent. Short peptides are small enough to enter the cortex without causing damage to the hair, and can form new disulfide bonds with α -keratin to change the hair shape. We selected three PEPA-PEPC-SPB short peptides and connected them with rigid linkers.

2. 1. 2 Project advantages

General perm technology often using alkaline reagents with chemical toxicity to penetrate the structure of the hair in the process of opening the disulfide bonds in the hair cortex. The most common hair dye on the market contains these toxic chemical reagents which should be responsible for irreversible damage to hair.



Figure 2 Traditional chemical harmful substances exist in hot and dyeing reagents 'Mr. Tony' team is committed to revolutionizing traditional perm technology and innovating traditional hair dyes. We form new disulfide bonds with cortical α -keratin through short peptides produced in yeast to change the hair shape and to avoid the possible hazards of traditional methods from a molecular perspective in a gentle way harmless to the scalp; Also, When disulfide bonds are generated by short peptides, The disulfide isomerase used can change the tensile strength and elasticity of the hair, At the same time of repairing damaged hair, Overcoming the

problem of chemical perm high pH, high chemical toxins; Meanwhile, we produce indigo, curcumin, and lycopene through yeast. Hair was healthy-stained after mixing these pigments reducing the risk of benzenediamine in traditional hair dyes and liver, kidney and other organs caused by heavy metal ions.

In addition, the dye agents of this project are reproducible. We can change the shape of the hair through short peptide, or restore the shape through the principle exactly the same. Ditto the hair dyeing through indigo, curcumin and lycopene which can be degraded by enzymes to restore the hair anytime and anywhere. No longer need to worry about getting your hair any permanent negative impact on your image.

In short: this project through biotechnology, using engineering bacteria to produce harmless substances to human body, greatly reduce the damage to hair, **healthier**; and achieve the **recovery** of perm hair through biotechnology, can achieve **temporary** dyeing, giving customers a **better** choice.

2. 2 Product function

2. 2. 1 Product type and introduction



graph 3 Mr.Tony product



graph 4 Mr.The Tony product using guide

The small Tony tank consists of three parts: yeast reaction chamber, filter membrane, and product storage chamber.

The filter membrane prevents the body in the body reaction chamber to ensure that nothing could leak out. In the reacting state, the yeast reaction chamber is located underside, where the yeast is free and the product spreads freely into the reaction chamber. In the using state, the chamber is located upside and all the fluid entered the product storage chamber and the reaction iss stopped. Remove and apply it to your hair. Easy to use.



graph 5 Mr.Tony Hair Dyeing Products

Before taking the Tony bottle, you need to oxidize the hair, then apply the product evenly to the hair. Following the steps on the instructions, hair is dyed.

2.2.2 Product effect

We examined the firmness of our coloring and compared it with conventional dyes.

Add quantitative hair dye and distilled water, fully dissolve, add hair, stir for a certain time. This is used as one time of decolouring. Then measure the absorbance of each washing solution, draw a curve, when this curve becomes horizontal, it becomes the decolouring ratio of each wash, which is used to measure the color fastness.

The results showed that the color fastness of natural hair dye is much higher than that of chemical dye.

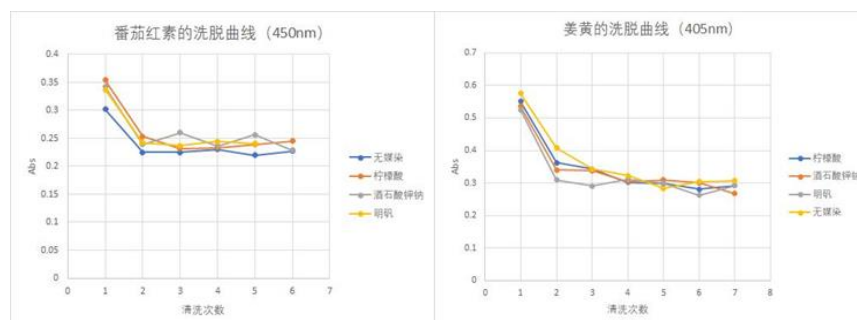


Figure 6-7 The elution curves of lycopene and curcumin

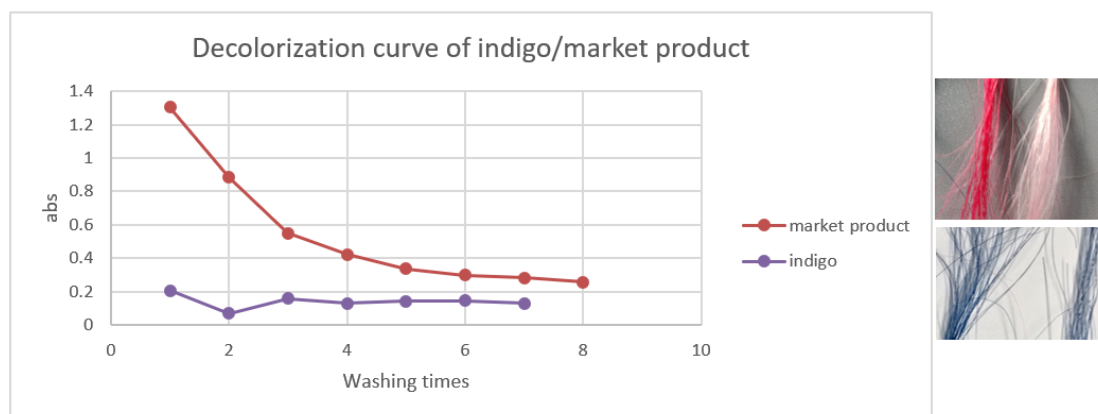


Figure 8 Color fastness test of Indigo and market chemical hair dye products

2. 3 Target user

We have a lot of obvious target users, because the big data of the whole market is in front of us, as long as we meet the needs of safety and health, we can open up a bigger one.

Art exam (students who pursuit of creating better appearance), the pursuit of beauty (all ages, video, advertising, beautiful young people, try to change their appearance of middle-aged people), perm hair will cause certain damage to hair, if young people continue to perm and dyeing, may cause bald in a young age. Using our product which has small hair damage, most people will rest assured. People in middle age are cautious for fear of mistakes and the reversibility of this project fully meets their the needs, helps them from their worries and can restore their hair back to where they used to be at any time. So they dare to give it a try. The elders dyed black (similar to Wang Mang, the old man needs to pay more attention to the safety problem).The physical condition of the elders is not as good as the young people. Dyeing for many times will cause great harm to the body. However, the project product solves the health problems and is meeting the needs of the elders.

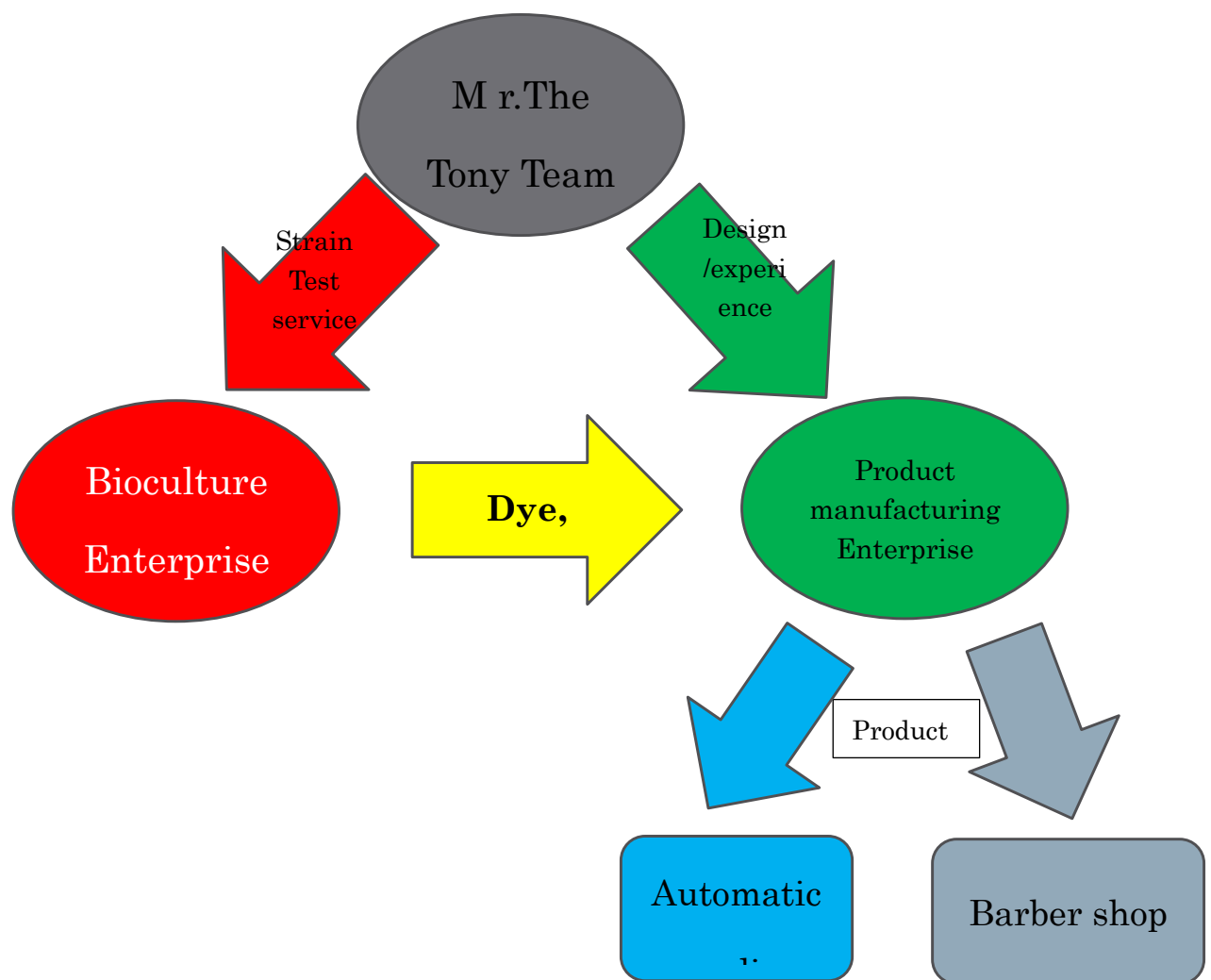
2. 4 Business model

2. 4. 1 Business model structure

Mr. Tony team provides initial strains and testing services to biocultural enterprises, enabling them to expand and obtain dyes and more strains to product

manufacturer; provides design and manufacturing experience, and then manufacture products by dyes and strains.

After getting the products, choices are to cooperate with the barber shops to sell the goods, or use the independent color deployment program to create vending machines.



graph 9 Mr. Tony diagram of the commercial pattern

3. Market prospects

3.1 Industrial background and market demand

The Revolution of 1911 not only overthrew the imperial system, but also broke open the closed communication to China. After that, the perm began to spread in China. After a long period of wandering and hesitation, until the 1980s, with the reform and opening, perm and dyeing gradually began to revive. In 2000-2003, young people in China launched a wave of perm and hair dyeing, when perm and hair dyeing belongs to the field of young people. Later, with the development of society, perm gradually extended to all ages, square dance aunts with waves, art students perm was common; And for hair dyeing, people of half hundred could dye their hair into black, like the earliest people applied hair dye —— Wang Mang, at the age of 68, he had white beard and hair all over his head, in order to hide his age, specially dyed hair and beard black.

With the people's ever-growing need for a better life, the development of perm and hair dye is growing rapidly, and the scale of the industry

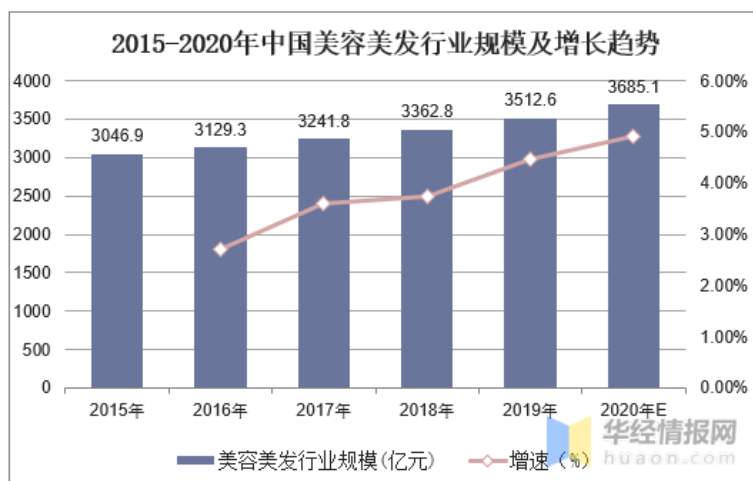


Figure 10 Scale and growth trend of China's hairdressing industry from 2015-2020 is rising continuously as well. The trend of rising will remain for a few years, and on the premise of satisfying the basic need for living, people will have a higher pursuit of life. Safety has also entered the scope of everyone's consideration, and the safety formula is generally the most vital valued by most people.

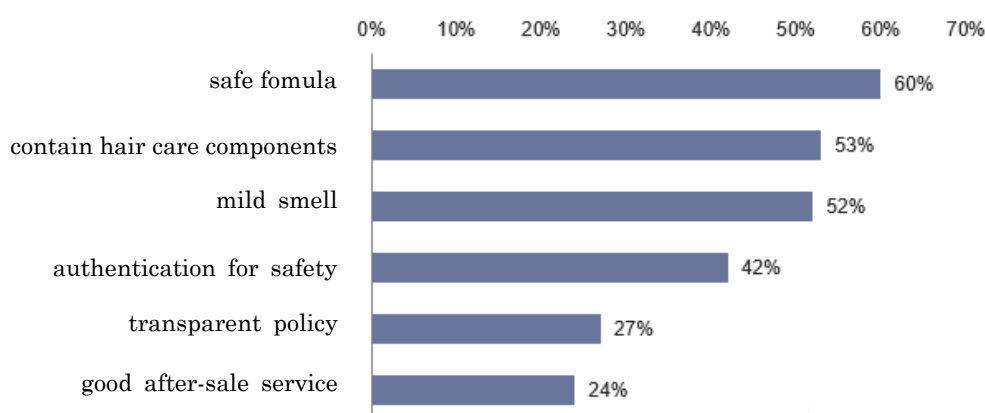


Figure 11 Factors mainly considered by consumers when buying hair dye products

Obviously, if there is a healthier or even completely no harm technology for perm and hair dyeing in the market, it can definitely lead the trend of the hairdressing market, and lead the hairdressing industry further.

3. 2 Competition strategy

Under the background of the booming development of the hairdressing

industry, due to the recent influence of the Covid-19 epidemic, the reduced frequency of people going out of hairdressing, high prices and other factors, more and more people choose to buy perm and hair dyeing products and do it themselves at home to save money and time. But at present hair dyeing products have only few colors to choose. It is way too difficult to meet the personalized home hair dyeing needs. Due to complex perm and dyeing operation process, home operation has great difficulties, coupled with the harm of chemical composition. Safe and efficient, DIY perm and dyeing products can greatly meet all these needs of users.

In terms of hair dye, we plan to use the enzymes related to engineering bacteria synthesis, with cheap and easy raw materials as reactants, using the method of biosynthetic fermentation to obtain the target pigment —— indigo, lycopene, curcumin, and red, yellow and blue: the three primary colors, to get the desired color according to the user needs, greatly meet the personalized needs. And the natural pigment has nursing effect on the hair, instead of injury. In addition, pigment is synthesized through the enzymes produced by engineering yeast to avoid the tedious steps of industrial pigment extraction and residual organic reagent problems, and can solve the problem of low yielding rate and ensure that no harmful substances remains in human body during the synthesis process. Safe and healthy. At the same time, designed to fade the dye, the opportunity to regret and try more is given to the users. Find the most suitable hair color, and even change the hair color or get back to the original hair color as many times as one wants to

meet the needs of different living-working occasions.

In terms of perm, the short peptide could change the shape of the hair, which is synthesized by the engineering strain. Changing the shape of the hair by inserting the short peptide, hair damage coming with strong reducing agents contained in the traditional chemical perm could be avoided. With the apply of the short peptide, the quality of the hair could be enhanced as well. This method is reversible, which means it goes the same when it comes to hair straightening.

We should publicize the concept of health, emphasize the innovation of recovery, the interest of autonomy, carry forward the strengths and occupy an invincible position in the market competition.

3. 3 Development prospects

Because the method used in this product is very innovative, it is greatly different from the existing hair dye perm agent in the market, which gives users great freedom of use, and almost avoids all the disadvantages of traditional hair dressing products, truly realizing the integration of hair dressing and hair protection. Moreover, the low cost of this product which only needs to use cheap and accessible raw materials and a small number of common materials needed to maintain the bacteria greatly reduces the production cost. At the same time, related products can be used many times after one purchase, and can match any color according to individual needs, or even restore the original hair color, curling and straightening operation according to personal preferences, greatly improve the user experience

and reduce the cost in pursuit of beauty, opening up the market with innovation and convenience. In the case of low cost and high quality service, it has obvious competitive advantages compared with similar hairdressing products. On the way of people's pursuit of a higher quality of life, a healthier, more autonomous and more interesting perm and hair dyeing technology will occupy quite a place in the hairdressing industry.

3. 4 Proprietary intellectual property rights

All the ideas and design of this product are from the internal members of the team, and all the reference data are from the public database. The complete product from the idea to the design and even publicity is completed by the team members. We have complete independent intellectual property rights.

4. Financial operations

4.1 Financing situation

For the project financing, the project party will complete the financing plan in different steps:

1, Corporation has a registered capital of ¥5 million. The equity capital structure and scale are as follows:

Source of financing	Venture capital	Internal financing		Service Provider
Financing scale		Technology participation	Capital participation	
Amount	200	75	180	45
Ratio	40%	15%	36%	14%

The scale and structure of share capital are tentatively set: registered capital of ¥5 million. The team raised 1.8 million funds, 750,000 technology participation, accounting for 51% of the shared capital; External financing accounted for 49%, including 2.45 million financing demand, 2 million venture capital, and 450,000 service provider. We hope to introduce 2-5 venture capital, 1 service provider to further diversify the risk, optimize the equity structure and prepare for possible future listings.

2, The project party applies for a loan of RMB 1 million in means of project mortgage.

4. 2 Profit model

The profit model of the company is mainly to provide dye R & D and development services to dye companies, long-term strains and testing strain activity. The main customers include Zhejiang Longsheng, Shanghai Kehua dye industry, Zhejiang Baihe chemical and other national well-known dye enterprises as well as L'Oreal, Schwarke and other well-known hair enterprises.

In the research and development services, the enterprise is responsible for the implementation of dye development activities, its basic business model on behalf of dye enterprise customers for part or all of the scientific research, mainly provides the development of new dye products discovery and research and development of specific use of dye development and dye management, new dye registration application and other professional technical service support, in order to obtain the entrusting remuneration. The basic business model of providing dye services is to accept the entrustment of dye and hairdressing enterprises or private barber shops, to support the process development and formula development designed in dye production, to provide custom production and manufacturing business, and to obtain the income from entrusted service according to the contract. But for the most vital, the company's core business is dye research & development services.

Customized vending machine and supporting independent dye deployment program is also an option. After deploying color in the program, customers could

take the dye and simply apply the dye according to the instructions, so as to realize "I decide my hair". Regular replenishment is the only need.

4. 3 Financial management

In order to comprehensively and accurately analyze the financial situation and operation of the project, conduct financial analysis of the project and establish the following financial assumptions:

- (1) Under the current tax law, the executive income tax rate is 25%.
- (2) For the initial input of experimental equipment, the estimated service life is five years, no residual value at the end, the depreciation is calculated according to the accelerated depreciation method;
- (3) The implement business projects and major development strategies run smoothly. The economic and social environment of the company's operation place don't change significantly.

Because the dye industry is still in the bottleneck of development, so in the early stage to try to let the enterprises know the brand, a large number of publicity activities to attract more cooperation is needed. Therefore, the income of first three months can reach about 200,000-280,000 yuan per month, with an average of about 7,000 yuan per day. After three months of insufficient improvement and optimization of the internal structure of the enterprise, the income should be steadily increased to about 300,000 yuan a month, and about 10,000 yuan a day.

According to the above sales data, the profit in the first year is about 1 million yuan, and in the second year, under the strong market publicity, the profit will be at least 1.5 million yuan.

Investment payback period refers to the time needed to offset the original investment with the net cash inflow during the operating period of the investment project. The investment payback period of this project is 1 year. So, the project can recover the initial investment, indicating that the project is feasible. The shorter recovery period of the project is conducive to timely repayment. Through the benefit analysis of the project, we find that the project benefit analysis can quickly adapt to the market changes and obtain the first opportunity of market development.

4. 4 Risk avoidance

4. 4. 1 Market risk

From the present perspective of the domestic market, the market has formed a certain scale, all kinds of enterprises have cut one market, the product quality is uneven, but the market demand has always shown a rapid growth momentum, and the consumption rate is constantly improving. In the case of optimistic demand market, some competitors, driven by interests, will introduce unfair competition, shoddy products, lower prices, and make huge profits. In this case, the company's target market could be squeezed,

To prevent possible recurring market risks, we should take the following

measures:

(1) timely conducts market tracking, understands the domestic situation and the demand trends of enterprise consumers, and timely adjusts the production quantity and sales of product countermeasures of the project.

(2) Make advantage of the Matthew effect and pioneer advantages, constantly occupy market share and form strategic advantages.

4. 4. 2 Business risk

Management risk is also an important risk factor of the project. This project belongs to a technological innovation project and is in line with the great strategy of green China. The project itself has good market prospects. However, as a new born project, there will be some inevitable risks in this operation process, which will affect the profit.

Uncertainty in the company's internal management, such as cost control, personnel change, capital operation, will bring risks to the company's operations.

In response to operational risks, our countermeasure is to further strengthen and improve relevant systems, while major decisions will be agreed by management, and investors will be informed of particularly important matters.

4. 4. 3 Financial risk

For this project, capital is an important factor to affect the project operation. If the risk of capital disconnection occurs in the project, it will affect the common

interests of the project cooperation. Therefore, corresponding compensation and response measures shall be formulated for the capital risk.

In order to deal with capital risks, the project cooperation shall have a capital risk response agreement at the beginning of its establishment, and both parties shall bear equal capital risk response obligations. If there is the risk of shortage of funds or disconnection due to the needs of the normal operation of the project, both parties shall adopt an equal attitude to raise the project funds, and in the normal operation of the project, the recovered profits shall be given priority to the supplementary funds made by both parties.

In addition, appropriate risk reserve is also necessary, requiring a certain degree of inventory cash as a risk reserve in addition to the project operation must be funded.

5. Competitive advantage in the same industry

5. 1 Cost advantage

5. 1. 1 Policy advantage

State launched many preferential policies for college students innovation entrepreneurship, such as the social department issued "employment entrepreneurship certificate" college graduates in the graduation year founded individual industrial and commercial households, sole proprietorship enterprises, 3 years according to each 8000 yuan per year limit in order to deduct the actual business tax, urban maintenance construction tax, education fees and personal income tax. In terms of loans and discount interest, eligible college students who start their own businesses can apply for a business guarantee loan according to the regulations, with a loan amount of 100,000 yuan. The state has also put forward the exemption of relevant administrative fees, enjoy training subsidies, innovative personnel training plans and mechanisms, so that the company can have a broader development starting point and development platform.

5. 1. 2 Resource advantage

Yeast is a single-cell fungus, a small single-cell microbe invisible to the naked eye, which mainly grows in an acidic and humid sugary environment, harmless and

easy to grow, existing in air, soil, water and animals. Yeast are facultative anaerobic organisms with no obligate anaerobic yeast found, and in the absence of oxygen, the fermented yeast gains energy by converting sugars into carbon dioxide and ethanol (commonly known as alcohol). Yeast needs similar nutrients like other living organisms. Like bacteria, it has a set of intracellular and extracellular enzyme system to decompose macromolecular substances into small molecular substances prone to cellular metabolism. It belongs to heterotrophs and is a natural fermentation agent convenient for long-term preservation and cheap price. This product uses yeast as a fermentation strain, pollution-free, and low price, easy to preserve and cultivate.

5. 2 Product advantages

5. 2. 1 Safety and technical advantages

At present, hairdressing products are seriously homogenized, and consumers generally consume medium and low-grade hairdressing products, but the existing oxidized hair dye in the market has good staining effect, wide range of color changes and long duration, and the aniline dye intermediates contained in them have certain harm to the human body. This product uses the most advanced microbial synthesis technology, using the short peptides produced by yeast to perm while repairing the damaged hair. The yeast produces indigo, curcumin, and lycopene to achieve different color hair dyeing technology. The technology has the characteristics of safety and non-toxic, green and environmental protection and

wide sources, which meets the needs of consumers' continuous pursuit of "green" hair dyeing products.

Our technical team is composed of Students from college of life science, Huazhong University Of Science And Technology, they come from biological technology, biological science related majors, compared with the industry technical level ability in the medium level, with solid professional quality, in the future technology innovation, product promotion all have sustainable development ability.

5. 2. 2Product advantages

Company dyeing products have attractive appearance,Dyeing hair with sinle spray can quickly grasp the needs of young fashion customers, hair color, provide personalized products and services, can be a popular products; the product can quickly let more people cognitive, simple and convenient use, not only to meet consumer daily life consumption, but also meet consumers entertainment, personalized customized needs, to achieve hair color freedom; the product can also become an emotional carrier, through different hair color to express mood, express different niche temperament, can greatly attract the attention of young groups.

Novel,at the same time to meet the daily needs of popular and life, make hair color return to nature, so as to make up for some congenital or acquired regret, such as oriental tradition of natural black for beauty, but due to old, genetic, disease

or nutrition loss factors cause gray hair, gray hair, need hair dye to change their mental outlook. Healthier biodyes, more convenient use methods, lower prices, make the product have an extremely wide range of beneficiaries.

5. 3 Brand advantage

With the rapid growth of Chinese cultural confidence, more and more young people have in recent years begun to choose domestic products to express self-feelings and fashion attitudes. In a "2020 Chinese Consumption Data Analysis" from Sina Home Furnishing, it shows that the national tide attention has risen more than five times in ten years. Today's national tide is not limited to new domestic goods, but the comprehensive rise of Chinese forces behind various fields such as culture, science and technology. Among them, with the upgrading of domestic products quality, more than 60% of consumers are willing to choose domestic goods. National attention to Chinese culture and major country science and technology is unprecedented, and Chinese people have ushered in comprehensive confidence in cultural and technological confidence. The product creation team is completely composed of local members, which accurately respond to the demands of consumer cultural consumption.

6. Team quality

6. 1 Personnel composition

The team is composed of Gu Daining, Liu Xinmin, Zhang Yuzhu, Cheng Mingyuan and Liu Chaoran. All of whom are from the student competition organization of Huazhong University of Science and Technology. Liu Xinmin, Zhang Yuzhu and Cheng Mingyuan have participated in the synthetic biology competition for many years. Gu Daining and Liu Chaoran are new members of IGEN this year. The team has strong cooperation ability, high tacit understanding degree, strong expert mentor strength, advanced management system, and good team environment.

Team members	Professional	Position	Main direction
Gu Daining	Biotechnology	Chairman	Planning for experimental arrangement and team building
Liu Xinmin	Biopharmaceutical	Technical Director	Core experimental operation
Cheng Mingyuan	Biotechnology	Technical researcher	Technical research
Zhang Yuzhu	Bioinformation	Financial Director	Key information collection
Liu Chaoran	Bioscience	Planning	Project-related publicity and design

6. 2 Qualification background

The team relies on huazhong university of life science and technology, Qiming institute, institute of environmental resources microbial technology institute,

energy biotechnology and ecology, life innovation base, and invited deputy secretary of life college —— associate professor (guide domestic and foreign discipline competitions, gold and silver competition gold and silver awards) and vice dean, deputy director of the Ministry of molecular and biology key laboratory professor Yan Yanjun (responsible for a number of national major strategic projects, total funds of 200 million yuan) as the team instructor, respectively to provide innovation and entrepreneurship guidance and professional technical guidance. The two platforms, the Institute of Environmental Resources and Microbiology Technology and the Institute of Energy Biotechnology and Ecology, have complete and complete experimental equipment. The start-up funds are jointly undertaken by the institute, the experimental platform and the IGEM team. The relatively favorable experimental conditions give us relatively free experimental space and high fault tolerance. Under the careful guidance of the tutors, the experimental process of the team was Advanced orderly.

Gu Daning is the monitor of class 2001, specializing in biotechnology, ranking the best in his freshman year and has strong leadership. He is responsible for planning the experimental arrangement in the team, adjusting the process according to the experimental results, and is responsible for the management part of the team.

Liu Xinmin, from Class Dengfeng 1901, is a biopharmaceutical with excellent achievements and rich experimental experience. She is mainly responsible for the

core experimental operation and basic experimental teaching, and the technical part of the team.

Cheng Mingyuan is Shengshi 1901 deputy group branch secretary, specializing in biotechnology, excellent achievements and good experimental operation and consciousness. She is responsible for technical research and literature collection in the team and the operation part of the team.

Zhang Yuzhu is from Shengxin Class 1901. He is specialized in biological information, with excellent achievements and skilled in experimental operation. He is mainly responsible for the core experimental operation and key information collection, and the experimental part of the team.

Liu Chaoran, from Shengbei Class 2001, specializes in biological science, with excellent grades and has high enthusiasm for learning. He is responsible for part of the experimental operation and project-related publicity and design in the team, and is responsible for the marketing part of the team.

6. 3 Team environment

Members of this team have great interest in synthetic biology and contact and seriously study the knowledge, experimental techniques and major ideas of synthetic biology in the IGEM team. The team is full of enthusiasm for completing the project. To this end, the IGEM team members began planning and design one year in advance. The team participated, insisted on the feasibility of attending the regular meeting discussion plan, and spent most of the summer time catching

up with the experimental progress.

Due to the experiment together on weekdays, the team members achieved a considerable degree of tacit understanding, unity, cooperation in place. Since the team members basically come from different majors, they are complementary in knowledge and operation, and everyone can do their best under the leadership of the team leader.

The team maintained a relaxed and pleasant relationship during the experiment, but was very serious in the process of the experiment and insisted on being meticulous. In their spare time of the experiment, the team organized members to learn innovation and entrepreneurship courses relying on Qiming College of Huazhong University of Science and Technology, and even take investment knowledge through elective management courses to create enterprises and design financial operations, and get the ideal result of 90 + in the final examination.

6. 4 Team system

The team has a clear division of labor, each member has the main tasks in a certain stage, submitting the results before the deadline and summarizing in the form of a regular meeting. As all the members have the experience of undertaking one or more undergraduate innovation projects, they all have the ability to complete a project independently. The team respects each member's strengths and tries to keep each member in the best position to develop their abilities.

According to the different professional expertise of the members, the team is mainly divided into experiment and management for personnel combination and task arrangement. The experiment part is mainly Liu Xinmin, and the overall experiment is divided into information collection, experimental simulation and experimental verification; the management part is mainly Gu Daining. According to a set of specific task "allocation —— completion" mechanism to realize personnel management and team construction, formulated a series of complete management system, the team will constantly adjust and optimize our management system through specific practical effects and strive to be people-oriented, lead the team members to a higher platform.

6. 5 Equity composition

The team is dominated by Gu Daining, and other members participate in the entrepreneurship as partners. At the beginning of the business, in order to avoid excessive equity dilution, the entrepreneurial team intends to account for 65% of the total equity of the company; for the partners, the company plans to encourage 15% of the equity. In the medium stage, the company will set up an equity incentive structure and financing control structure, and plans to reserve 25% of the equity to attract and retain talents as the core employees. In the mature stage, the company will design a multi-level shareholding platform design to retain the main control of the company by signing agreements.

7. Social benefits

The project aims to apply the technology of synthetic biology to integrate modern perm and hair dyeing, and is greener, healthier, more efficient and more practical than traditional technology. With its cheap characteristics, it can improve people's interest in perm hair after the production market, and as the popularity of perm hair increases, people will have a more diversified definition of fashion. Convenient hair dyeing technology will also stimulate the innovation of the hairdressing industry, liberate barbers from the monotonous perm dyeing. Procedural variety of hair colors will promote the people's consumption of hair accessories, hair conditioner and other related products, so as to provide corresponding industrial positions, improve people's quality of living.

In addition, the application of more advanced synthetic biology technology to deal with hair is also a response to the slogan of "promoting mass entrepreneurship and innovation through innovation-driven development strategy", breaking the stereotype of "high level" of science and technology, and showing the power of "scientific and technological innovation for the people" to the general people.

7. 1 Promote the health of perm and dyed hair, and maintain consumer safety

With the improvement of people's consumption level, the continuous pursuit

of fashion, perm hair market is booming, considerable economic benefits; however, perm, although perm varies, such as ion perm, woven perm, spiral Perm. its procedures are quite time consuming, the average time is measured in hours, and need professional equipment and experience, so for the average person every perm must carefully arrange the schedule. In terms of hair dyeing, most of the hair dyeing reagents on the market now contain aromatic amine compounds, which are easy to stimulate the skin, and excessive intake of human body is even easy to cause lymphoma and leukemia, which seriously damage the health of consumers.

This project is based on synthetic biology technology, with engineered yeast as the carrier, with the particularity of short peptide hair physical and chemical curl, Respectively express lycopene, indigo, curcumin three kinds of natural color hair dye, Dyeing process is simple and time-saving. Because natural pigment can be extracted from plants, minimize the harm to human body, thus ensuring the personal safety of consumers.

7. 2 Biotechnology makes consumers to perm their hair more accurate and convenient

Not only are the products of this project diverse, but also because the secretion of short peptides is predicted in a certain environment, the curl of hair can be accurately controlled according to different ratios of yeast. In addition, because the pigment obtained by expressing the bacteria of the target protein

contains the primary colors of red, yellow and blue pigments, consumers could adjust the proportion of engineering bacteria to ferment according to the appropriate proportion. Meanwhile, the purity of the pigment will be very high due to the specificity of bacterial expression. To sum up, it is bound to reach the quality.

The products of this project need to be used immediately. For users, they can dye their hair anytime and anywhere, no longer limited by equipment and location, and even complete the change of hair color individually at home. Considering the small attachment of natural pigment, users can wash away the dyed hair color at any time, and constantly try new formula and new hair color. The sustainable utilization of this project product is outstanding.

7. 3 Cause perm dyeing reform, promote the iteration of the hairdressing industry

The engineering bacteria used in this project is *pichia pastoris*, with low comprehensive material cost, good hot dyeing effect, good quality and low price. It is bound to cause the new reform of hot dyeing concept after production and listing. Compared with all kinds of hair dyes on the market, this product also provides a perm means will be a big highlight. After the product is launched, the penetration rate of perm dyeing will grow very rapidly, and people's definition of fashion will be iteratively updated. Barbershops that only master traditional perm

and dyeing techniques will set off a revolution, those who rely solely on perm and dye technology to make money need to consider technological updates or more attractive promotional methods, and for those barber shops with hair technology and hair innovation profit, this project's products will liberate barbers from monotonous, tedious perm hair services, give them more time to think about new hair design, so as to promote the beneficial update of the tertiary industry, provide more excellent service for the quality.

7.4 Drive the development of surrounding industries and extend the fashion industry chain

The products make perm hair more popular. For a variety of fresh hair styles, the increased sales of various headaddresses can be expected. At the same time, in order to maximize the use of the project products, repeated changes of hair color will develop the hair care industry to a certain extent. Thus, perm hair as the starting point to extend the industrial chain, promote the employment of related industries, make the hairstyle design more diversified and national life more abundant.

7. 5 Make science and technology close to the people, and truly achieve innovation to change life

The synthetic biology technology used in this project is the cutting-edge technology of the 21st century, but the products are very affordable and applied to the common hair dyeing, which is a typical model of the transformation of scientific and technological achievements, in response to the call of the transformation of scientific and technological achievements in recent years, broke the masses of frontier science and technology "cold" stereotype, promote researchers to think about the proposition, enlightenment to the broad and fine, can make science and technology away from ivory tower, benefit people.