

A survey about Bio-perming & dyeing of team HUST-China

Basic information

1. Gender [single choice questions]

Choices	Subtotal	Ratio
Male	309	28.09%
Female	791	71.91%
Valid questionnaire	1100	

2. Age [single choice questions]

Choices	Subtotal	Ratio
<18	22	2%
18-30	442	40.18%
31-45	220	20%
>45	416	37.82%
Valid questionnaire	1100	

3. Vocation [single choice questions]

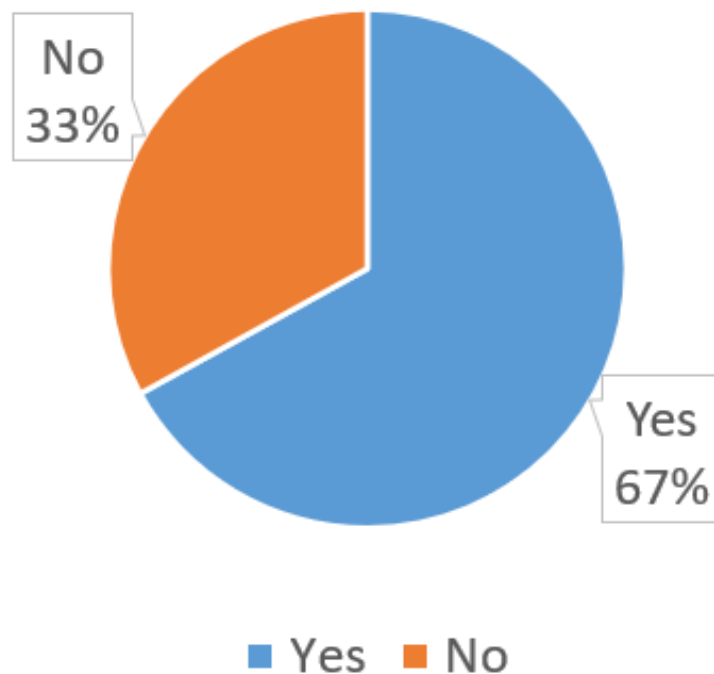
Choices	Subtotal	Ratio
Student	421	38.27%
Professional personnel (Teacher/Qualified doctor/Lawyer)	191	17.36%
Public officer/Government staff/Employee	172	15.64%
Services personnel	52	4.73%
Agriculture/industry personnel	45	4.09%
Liberal professions	131	11.91%
Else not listed	88	8%

Valid questionnaire	1100
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Perming

4. Have you ever had a perm? [single choice questions]

Choices	Subtotal	Ratio
Yes	737	67%
No	363	33%
Valid questionnaire	1100	

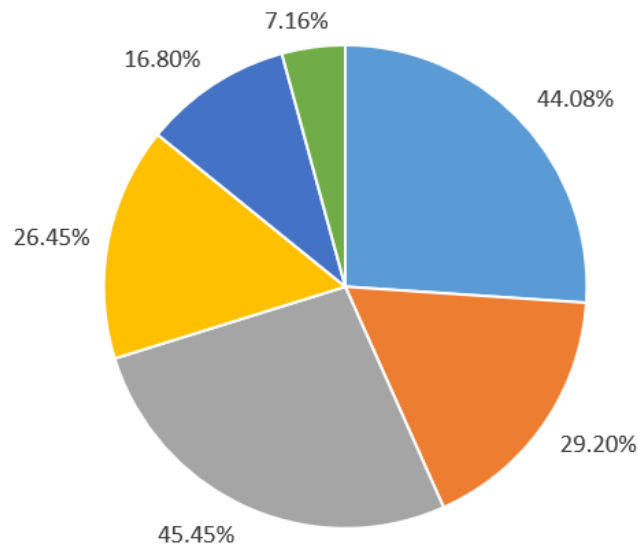


5. If not, why?

Choices	Subtotal	Ratio
I'm not interested and won't try it whatsoever	160	44.08%
Limitation of requirement of daily work/study. Perm will be considered as unseemly conduct.	106	29.2%
Possible damage to the hair is unbearable	165	45.45%
Not sure if the effect will be satisfying	96	26.45%
Too high the price	61	16.8%
Else not listed	26	7.16%

Valid questionnaire

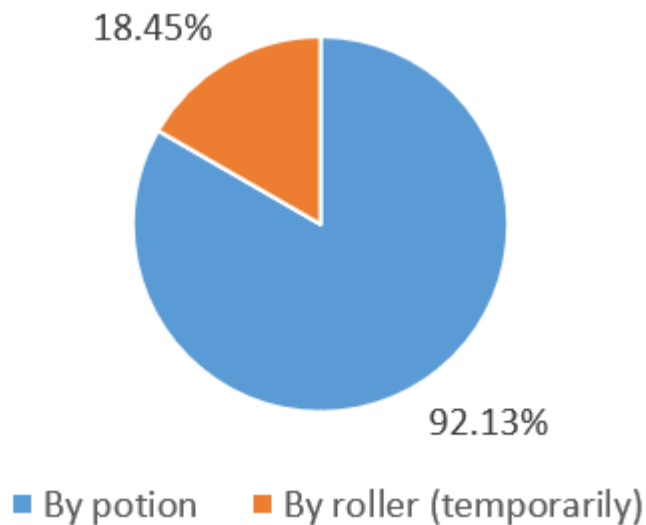
363



- I'm not interested and won't try it whatsoever
- Limitation of requirement of daily work/study. Perm will be considered as unseemly conduct.
- Possible damage to the hair is unbearable
- Not sure if the effect will be satisfying
- Too high the price
- Else not listed

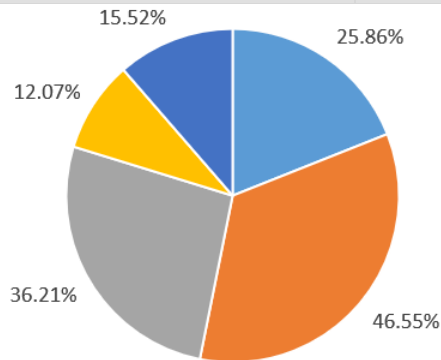
6.If you did, how did you have your perm? [\[multiple choice question\]](#)

Choices	Subtotal	Ratio
By potion	679	92.13%
By roller (temporarily)	136	18.45%
Valid questionnaire	737	



7. Why don't choose a permanent/long-lasting potion perm? [multiple choice question]

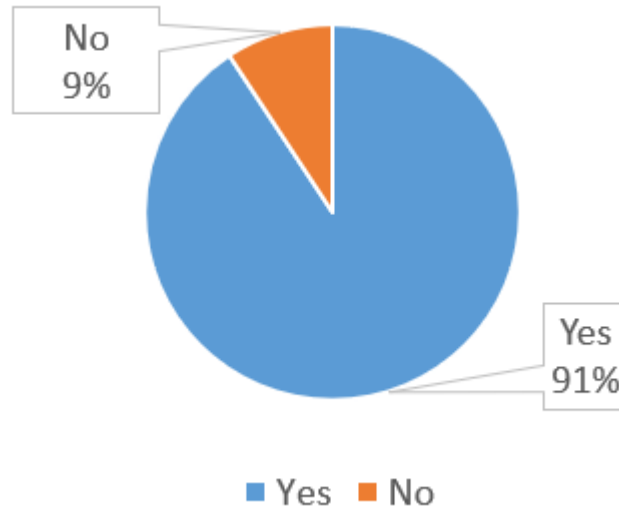
Choices	Subtotal	Ratio
Perm is only wanted under specific circumstances. Long term of perm is improper when at work/studying	15	25.86%
Potion may damage the hair	27	46.55%
Just trying for a short time, don't know if the effect would be satisfactory or not.	21	36.21%
Too high the price	7	12.07%
Else not listed	9	15.52%
Valid questionnaire	58	



- Perm is only wanted under specific circumstances. Long term of perm is improper when at work/studying
- Potion may damage the hair
- Just trying for a short time, don't know if the effect would be satisfactory or not.
- Too high the price
- Else not listed

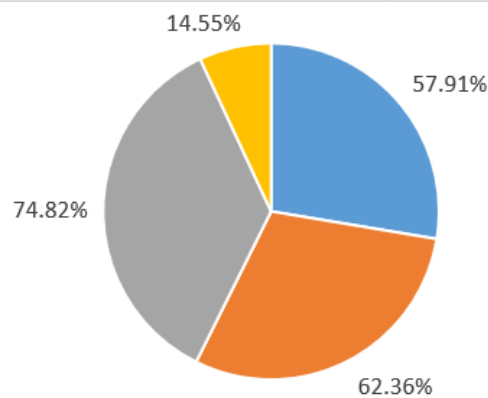
8. Are you worried about the toxic side effect or hair damage of perm? [single choice questions]

Choices	Subtotal	Ratio
Yes	998	90.73%
No	102	9.27%
Valid questionnaire	1100	



9. According to your understanding, what kind of physiology damage would be caused by perm? [\[multiple choice question\]](#)


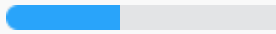
Choices	Subtotal	Ratio
Potion used by permanent perm will cause skin anaphylaxis	637	57.91%
Permanent perm will need to open the cuticle of the hair and cause unreversible damage to the hair quality	686	62.36%
Heat using in instant/temporary perm would scorch the hair and make it coking, crisp and yellowing. Or in short, just cook the hair.	823	74.82%
None of the above	160	14.55%
Valid questionnaire	1100	

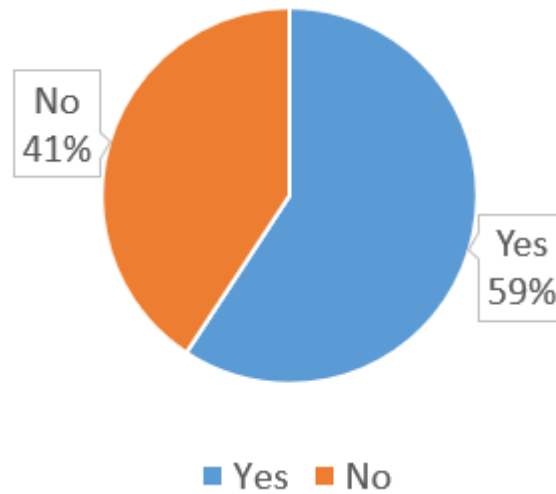


- Potion used by permanent perm will cause skin anaphylaxis
- Permanent perm will need to open the cuticle of the hair and cause unreversible damage to the hair quality
- Heat using in instant/temporary perm would scorch the hair and make it coking, crisp and yellowing. Or in short, just cook the hair.
- None of the above

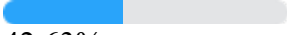
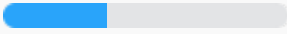

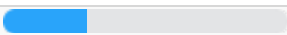
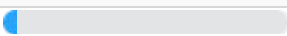
Dyeing

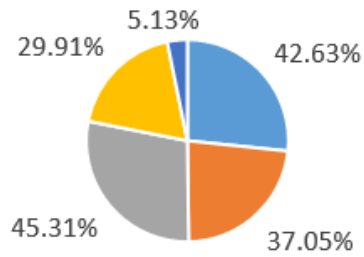
10. Have you dyed your hair before? [single choice questions]

Choices	Subtotal	Ratio
Yes	652	 59.27%
No	448	 40.73%
Valid questionnaire	1100	



第 11 题 Why not? [multiple choice question]

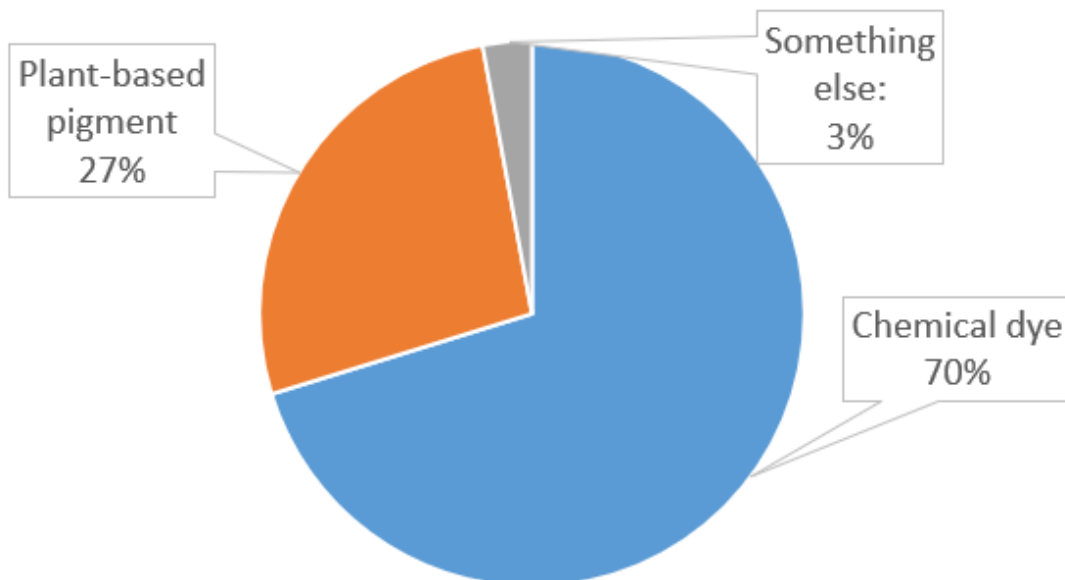
Choices	Subtotal	Ratio
I'm not interested and won't try it whatsoever	191	 42.63%
Limitation of requirement of daily work/study. Perm will be considered as unseemly conduct.	166	 37.05%
Possible damage to the hair is unbearable	203	 45.31%
Not sure if the effect will be satisfying	134	 29.91%
Else not listed	23	 5.13%
Valid questionnaire	448	



- I'm not interested and won't try it whatsoever
- Limitation of requirement of daily work/study. Perm will be considered as unseemly conduct.
- Possible damage to the hair is unbearable
- Not sure if the effect will be satisfying

12. What kind of dye did you use? [single choice questions]

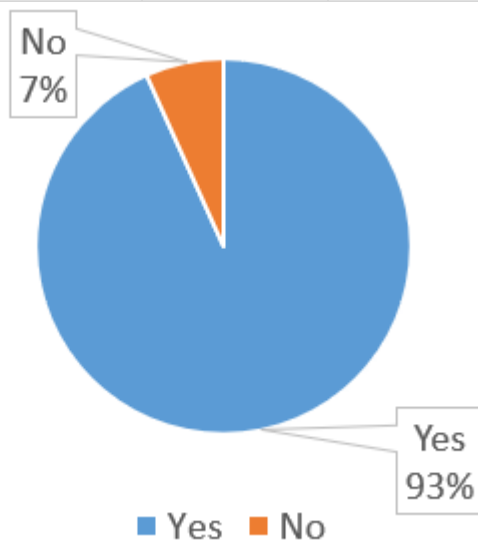
Choices	Subtotal	Ratio
Chemical dye	458	70.25%
Plant-based pigment	175	26.84%
Something else:	19	2.91%
Valid questionnaire	652	



- Chemical dye
- Plant-based pigment
- Something else:

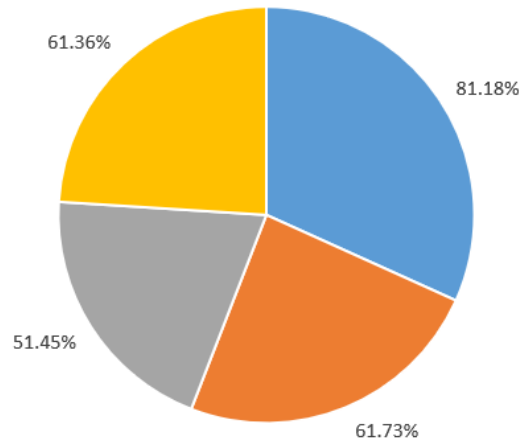
13. Are you worried about the toxic side effect or hair damage of dyeing? [single choice questions]

Choices	Subtotal	Ratio
Yes	1026	93.27%
No	74	6.73%
Valid questionnaire	1100	



14. According to your understanding, what kind of negative effect would be caused by dyeing? [multiple choice question]

Choices	Subtotal	Ratio
The skin may absorb some of the organic oxidative dye, which is kind of carcinogenic	893	81.18%
The organic oxidative dye may act as allergen	679	61.73%
The organic oxidative dye may pollute the environment, for example killing fish in water and causing dysregulation of self-purification capacity in soil	566	51.45%
Long-term accumulation of heavy metal element contained in inorganic dye when dyeing the hair black is hazardous to health	675	61.36%
Valid questionnaire	1100	

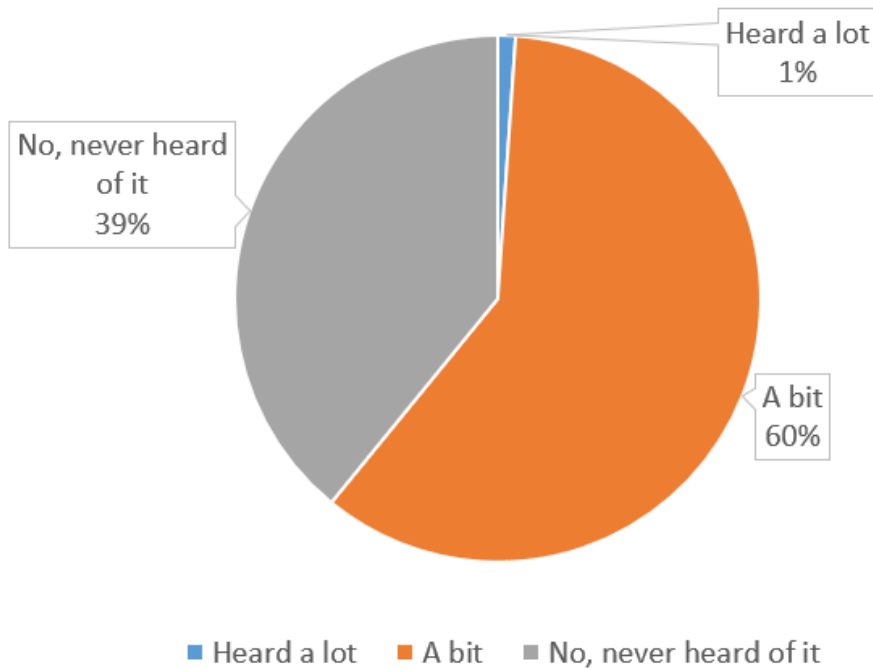


- The skin may absorb some of the organic oxidative dye, which is kind of carcinogenic
- The organic oxidative dye may act as allergen
- The organic oxidative dye may pollute the environment, for example killing fish in water and causing dysregulation of self-purification capacity in soil
- Long-term accumulation of heavy metal element contained in inorganic dye when dyeing the hair black is hazardous to health

Plant-based dye

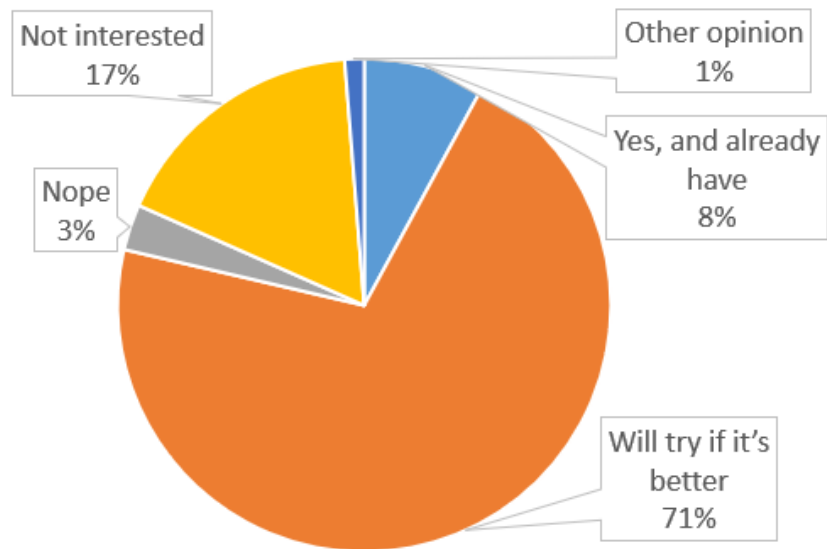
15. Have you ever heard about plant-based dye? [single choice questions]

Choices	Subtotal	Ratio
Heard a lot	12	1.09%
A bit	658	59.82%
No, never heard of it	430	39.09%
Valid questionnaire	1100	



16. The plant-based dye is thriving these years, the main ingredient of which is natural plant pigment. It has vivid colour, reliable safety, little toxic side effect and no harm to the environment. But for the moment, the product still needs to conquer some flaws like dyeing restriction, lack of stability and monotonous colours. At the same time, due to the complicated extraction and low extraction rate, the price of the authentic plant-based dye is relatively high. So, the market contains mixture of good and bad, real and fake kinds of dye at present. Would you choose plant-based dye? [single choice questions]

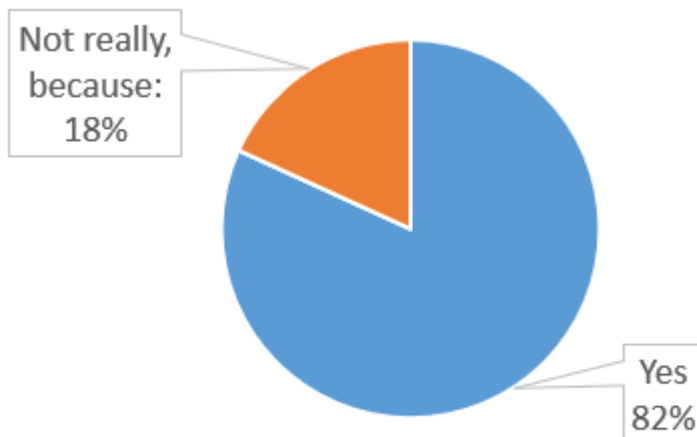
Choices	Subtotal	Ratio
Yes, and already have	87	7.91%
Will try if it's better	778	70.73%
Nope	33	3%
Not interested	188	17.09%
Other opinion	14	1.27%
Valid questionnaire	1100	



■ Yes, and already have
 ■ Will try if it's better
 ■ Nope
■ Not interested
 ■ Other opinion

17. Are you pleased with the effect of plant-based dye described above, regardless ones already obtained or expected? [single choice questions]

Choices	Subtotal	Ratio
Yes	72	<div style="width: 81.82%; background-color: blue;"></div> 81.82%
Not really, because:	16	<div style="width: 18.18%; background-color: blue;"></div> 18.18%
Valid questionnaire	88	

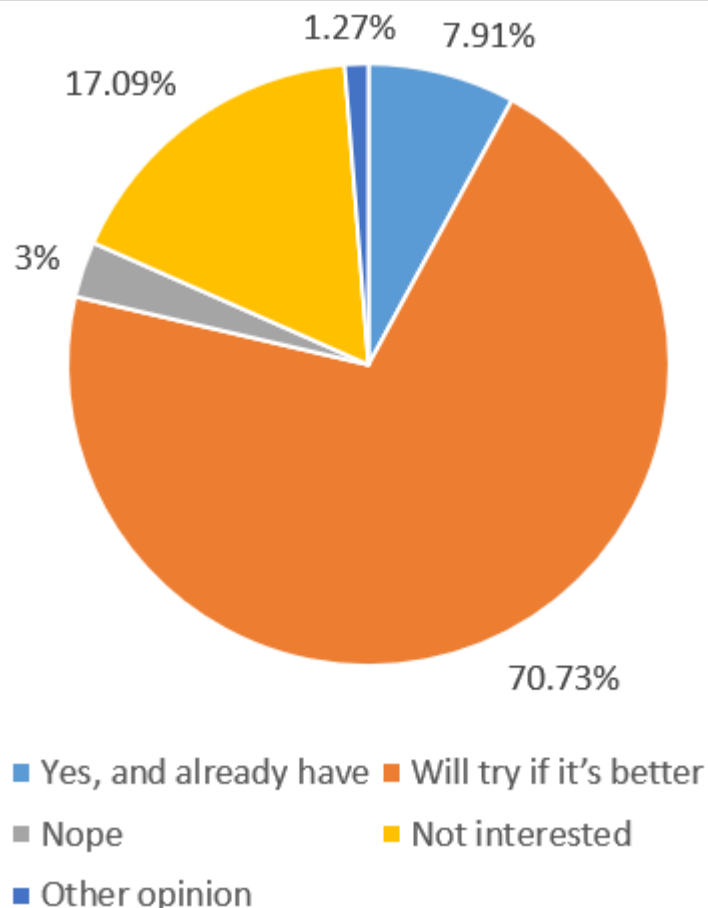


■ Yes
 ■ Not really, because:

18. What else do you worry about plant-based dye? [multiple choice question]

Choices	Subtotal	Ratio
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Nothing because I'm not interested	253	23%
Nothing else to worry about, I will give it a try	160	14.55%
Terrible staining effect	275	25%
The effect can't last for too long	382	34.73%
A bit too expensive. No good cost performance	355	32.27%
Too dull the colour and don't have my favorite	214	19.45%
Can't tell the fake ones from the authentic	491	44.64%
Don't mind using the chemical dye thought it has some toxic side effect	17	1.55%
Something else:	31	2.82%
Valid questionnaire	1100	



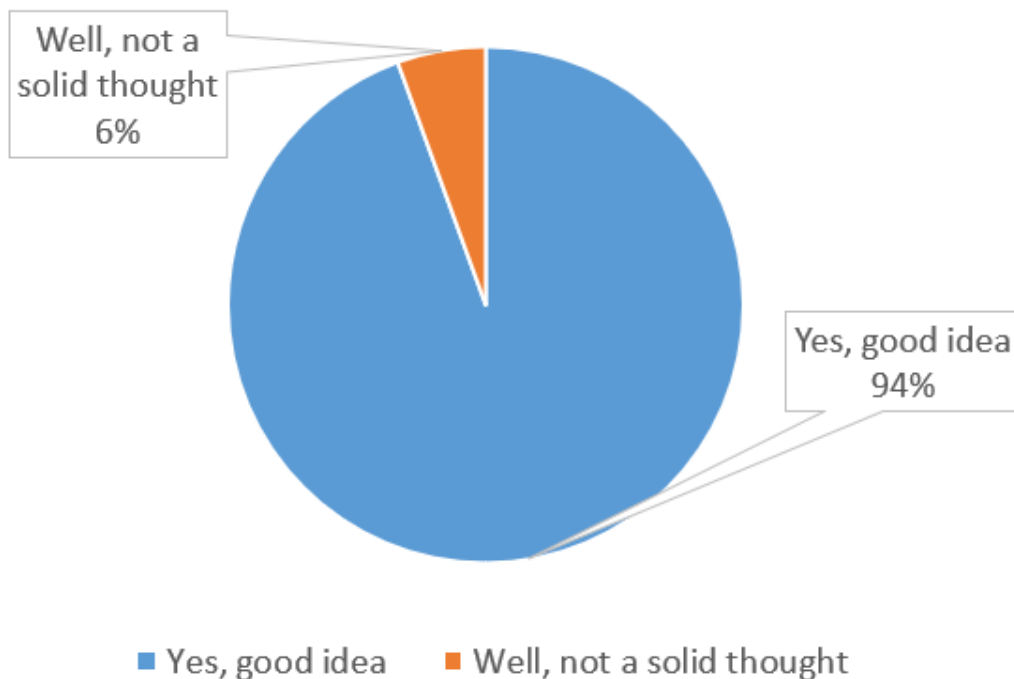
iGEM HUST-China Bio-perming & dyeing project

We are a team of synthetic biology. Recently, a brand new, environmentally friendly perming & dyeing program is on the horizon. In short, we plan to use polypeptide with reducibility to perm and red, yellow, blue plant pigment to dye. A DIY palette is designed and could be used to construct any ideal colour. We are aiming to minimize the damage to the hair, so genetic engineered yeast is used for producing these. Be assured, no yeast would end up on your hair due

to the special ‘cage’, which could prevent the yeast from leaking out from the reaction chamber. The only thing applied is the substance from the production reaction launched by the hairdresser—you yourself. You could trust the safety of the product which is carcinogen and allergen free. And we also design the anti-product using for straightening and decolouring for you to switch hair colour and convolution degree at will.

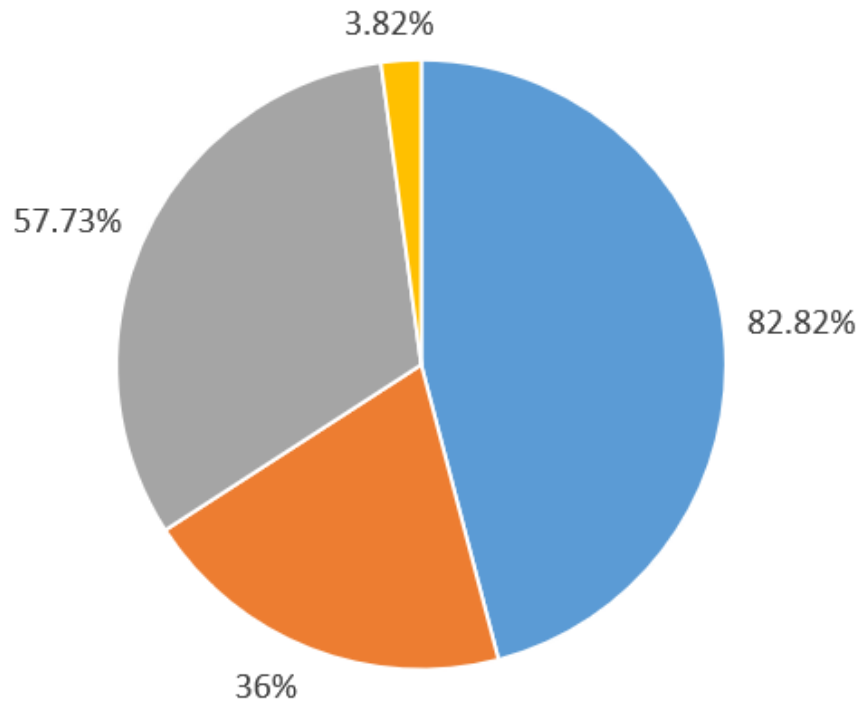
19. Are you in favor of our bio-perming and dyeing project? [single choice questions]

Choices	Subtotal	Ratio
Yes, good idea	1039	94.45%
Well, not a solid thought	61	5.55%
Valid questionnaire	1100	



20. What feature of our product do attract you? [multiple choice question]

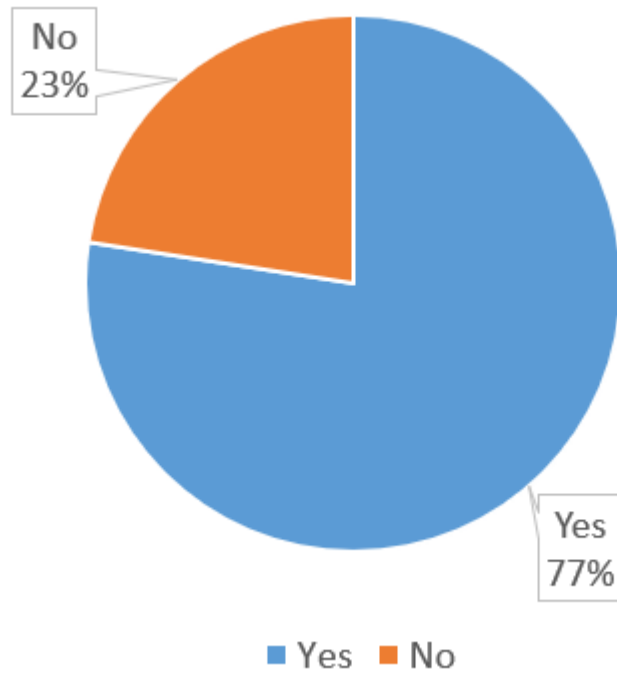
Choices	Subtotal	Ratio
Minimum damage to the hair	911	82.82%
I could manipulate the colour and convolution degree of my hair at will	396	36%
‘Yes’ to anything environmentally friendly	635	57.73%
Something else:	42	3.82%
Valid questionnaire	1100	



- Minimum damage to the hair
- I could manipulate the colour and convolution degree of my hair at will
- 'Yes' to anything environmentally friendly
- Something else:

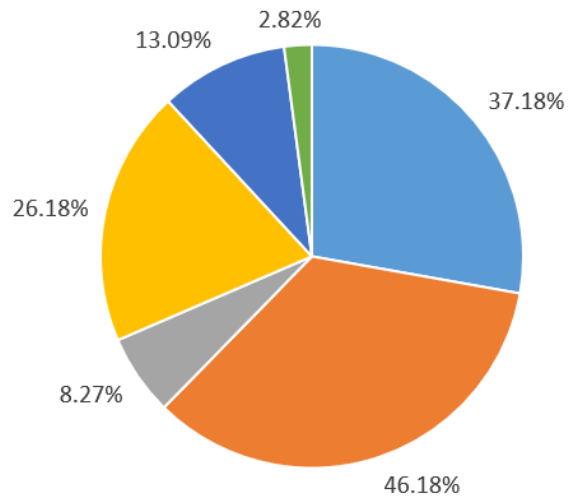
21. Our product is able to instant hair customizing and reverse operation with simple applying and minimum damage. You could change your hair colour as you wish at a low cost. At the same time, no need to worry about the ideal outcome would be too exaggerate to be prohibited from some specific official daily occasion since the instant elution. We would like to know whether you are interested in such a product or have similar requirement? [single choice questions]

Choices	Subtotal	Ratio
Yes	852	77.45%
No	248	22.55%
Valid questionnaire	1100	



22. Is there anything else you are worried about? [\[multiple choice question\]](#)

Choices	Subtotal	Ratio
Nope, I shall expect nothing more	409	37.18%
The dyeing effect, is there any way to make it last longer?	508	46.18%
Firmly and uncompromisingly NO to anything that comes from genetic engineering	91	8.27%
Who knows what will happen when we have something come from yeast on our hair?	288	26.18%
Don't trust our substance used in dyeing	144	13.09%
Something else:	31	2.82%
Valid questionnaire	1100	



- Nope, I shall expect nothing more
- The dyeing effect, is there any way to make it last longer?
- Firmly and uncompromisingly NO to anything that comes from genetic engineering
- Who knows what will happen when we have something comes from yeast on our hair?
- Don't trust our substance using in dyeing
- Something else:

23. Is there any others suggestions and expectations you have to let us know?