PROJECT 1 REPORT

Communication Design and Evaluation for Genetic Testing Service

Summer Internship at
Global Gene Corp,
Mumbai

7 May – 13 June 2014

Sylvan Lobo
Interaction Design
Industrial Design Centre

Global Gene
CORPORATION

Date: 13 June, 2014

This is to certify that **Mr. Sylvan Lobo,** pursuing his Masters in Design (MDes - Interaction Design) at Industrial Design Centre, IIT Bombay, Mumbai, has successfully completed his summer internship at **Global Gene Corp**, Mumbai, from **7 May to 13 June**.

His internship activities included familiarising with the domain of genetic testing, visualizations, ideation, creating infographics, and guiding and evaluating the design of various artefacts that the consumers would interact with. We found him sincere, hardworking, and technically sound. He worked well with the team during his tenure.

We take this opportunity to thank him and wish him all the best for his future.

Kushagra Sharma
Chief Operating Officer
Global Gene Corp

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Abstract: "Global Gene Corp is an upcoming service offering in healthcare that promotes prevention of diseases through genetic testing customised for Indian population. This is an early-on approach which can predict onset and susceptibility to conditions and disorders allowing timely intervention, as against traditional diagnosis which is done only when symptoms are visible.

Design work included the various communication related artefacts in the company to promote awareness of the service and the subject of genetics to doctors and customers. This included mapping and visualizing the operations of the service, and identifying gaps and opportunities; evaluating and guiding the design of brochures for doctors and customers, test requisition form, invites; ideation for keepsake gifts within the theme of genetics; evaluating the website; redesign of education presentation material and infographics.

Keywords: genetics, service, communication design.

CONTENTS

INTRODUCTION

Research in genetics has been advancing rapidly. Genetic testing can inform us about our chances and risk of specific diseases or conditions, susceptibility to drugs therapy, and finding disorders before onset. This early-on knowledge can help in early intervention before symptoms may show up, allowing informed decisions about managing health care, taking necessary preventive actions, monitoring, or simply being relieved knowing that one is not prone to an undesirable condition.

The approach of genetic testing is different from the traditional diagnosis approach which is done usually only when symptoms are visible. Treatment at this stage can be less effective. Genetic testing can inform at an earlier stage and motivate change in lifestyle habits and early-on treatment, delaying onset or preventing the condition.

Genetic testing is just emerging in India. Its awareness and benefits are not well known both among customers and doctors. Genetic testing is still a field where a lot of research and discoveries are being made. The full potential is not yet open. Most services currently available are based on research on research in Caucasian genotype. However, there has also been increasing research in Indian genomic variation [IGVdb, Indian Genetic Disease Database, etc.]

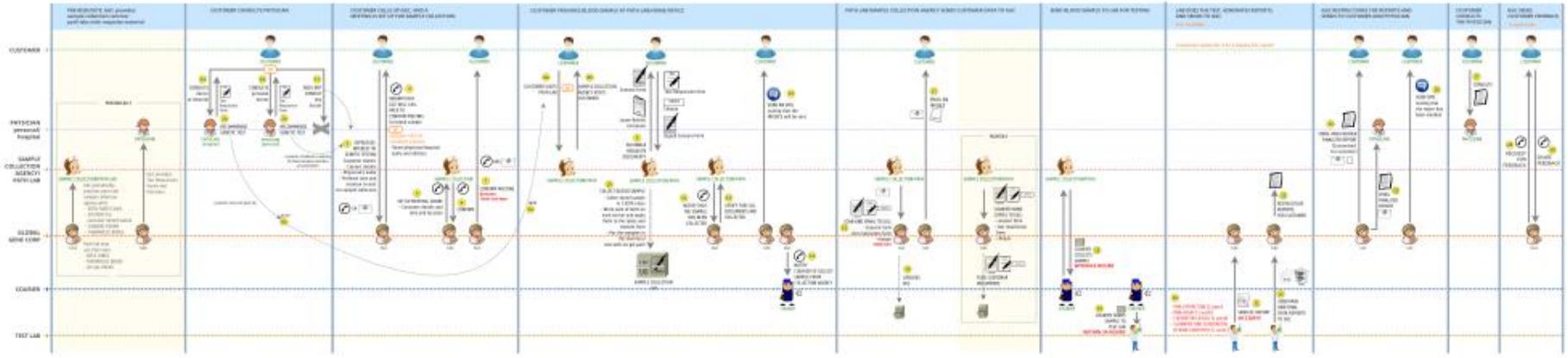


Fig. 1a: Operations map of Global Gene Corp

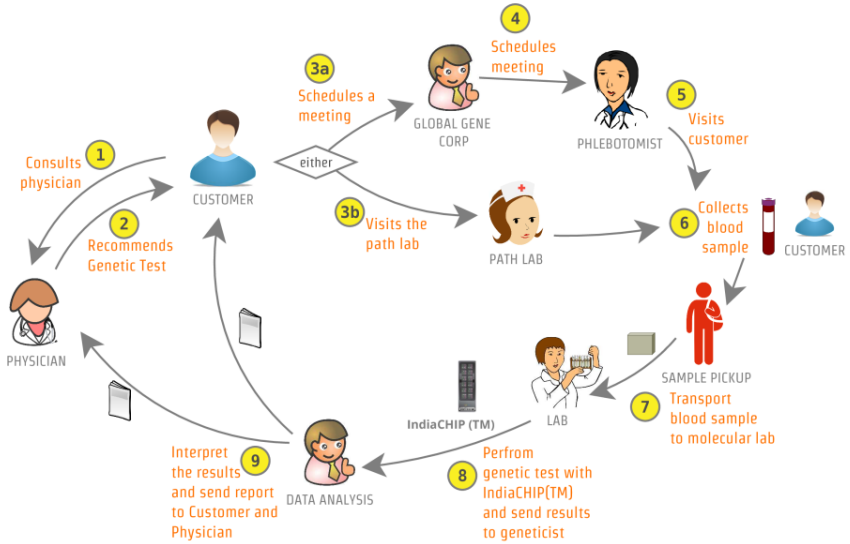


Fig. 1b: Operations map of Global Gene Corp for presentations

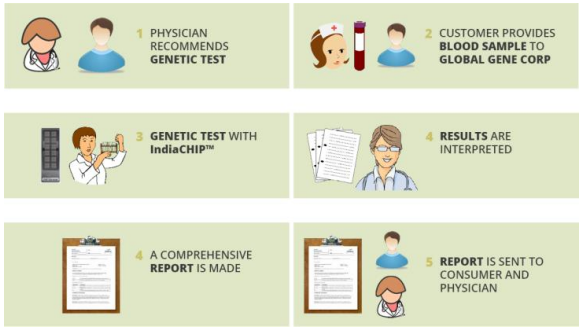


Fig. 1c: Operations map of Global Gene Corp for presentations

Global Gene Corp provides the service of genetic testing catering specifically to the Indian population through their innovation – IndiaCHIP™. IndiaCHIP™ is a technology for testing a lot of samples at a time to identify specific mutations in the genome that are associated with specific diseases and conditions that are prevalent in India, and is based on research findings for Indian population. Global Gene Corp offers:

- Tests specific to the Indian population
- Specific tests of which results are actionable and useful
- Reports that are easy-to-read for the customer, and informative to physician for diagnosis and further action.

In this emerging service area, Global Gene Corp understands the usefulness of design and a user centered approach. I have worked on the various communication related artefacts that consumers and doctors would encounter while availing the service.

MOTIVATION

My motivation for choosing to intern at a genetic testing company was that I felt that genetic testing is an upcoming field in healthcare, with interesting possibilities and benefits although riddled with ethical and legal concerns. With my personal interests in cancer prevention and visual impairment, I hoped to learn the capabilities and limitations of genetic testing. Also, I found a lack of design intervention in the area of genetic testing healthcare services, and felt this was a good area to explore. It also gave me an opportunity to work in a startup environment dealing with a relatively new concept in a fresh market, and to work across the services and operations of the company in improving the communication artefacts, and to understand the genetics domain and implications.

WORK AREAS

My area of work in design at Global Gene Corp included the various communication related artefacts in the company to promote awareness of the service and the subject of genetics to doctors and customers. This included mapping and visualizing the operations of the service, and identifying gaps and opportunities; evaluating and guiding the design of brochures for doctors and customers, test requisition form, invites; ideation for keepsake gifts within the theme of genetics; evaluating the website; redesign of education presentation material and infographics.

a. Domain knowledge

I spent time across the internship period learning to have a basic understanding of genetics, terms like genetics, DNA, genes, chromosomes, the tests, types of common diseases, genetic disorders, genetic testing technology and terminology, benefits of genetic testing, and ethical and legal concerns.

Phases	ATTRACTION				ENTRY		
Physical Evidences	**Ad/Website**	**Doctor consults and recommends genetic testin**	**Test Requisition Form**	**Invite Envelope**	**Email/Phone (for information/signing up)**	**Website (signing up)**	**Email/Phone (visit for sampl**
Customer Steps	Finds out about genetic testing casually	Finds out about genetic testing while consulting a doctor (for a specific illness/disorder?)	Finds out about genetic testing while consulting a doctor (for a specific illness/disorder?)	Customer receives a genetic testing invite	Customer calls up Global Gene Corp to either/both 1. find more details 2. sign up and set up a meeting place and time for sample collection	Customer signs up for testing. Provides preference for time and place for sample collection?	Customer receiv sample collectio
Thoughts Emotions		Apprehension of the direct disorder consulting for, may give less importance to the genetic counselling	Apprehension of the direct disorder consulting for, may give less importance to the genetic counselling	?	1. doubts 2. confident		Possibility of beir call
Gaps	Learning about genetic testing quickly, in a fun way.	1. May not remember all that the doctor recommended. Is it sufficient to make him consider genetic testing? 2. How does the doctor explain to the customer? 3. How does one get access to medical history, family history?	May need some information later in the day to reconsider genetic testing and know about its importance.	(Out of the blue? What motivates him to go ahead?)	The sample collection can only be done during working hours. Customers may have difficulty scheduling. Most likely the option would be to visit work place, which might not be very comfortable for the user. May prefer late evenings/weekends.		Possibility of beir call
Opportunities		1. A cool booklet on genetics/Video on the website 2. A guide/infographic for the doctor (Test form reference sheet) or a Brochure/Video for customers 3. Interactive tool for discovering/visualizing family history, on the website?	A cool booklet on genetics, whose last page is a tear out form - Test requisition form		Do it your self kits? (saliva/cheek swab) Corporate collection drives	Sign up form/email - list of details required	Confirm the meet call and addition directly again onl be rescheduled.

Fig. 2: Service blueprint

b. Operations map

The company operations process was documented as a mindmap. It needed to be visualized and mapped appropriately so that it could be referred to by (new) employees.

Approach: I borrowed concepts of Service Design – Customer Journey Map and Experience Blueprint, in order to bring out a customer focus throughout and make evident the artefacts and documents involved, the timeline and steps taken by the company, interactions with third-parties and backend systems. The document was iteratively reviewed until it was simplified and captured all aspects of the operations process. The structure was as follows: *Rows*: Customer, Artefacts and documents, Physician, Company, Third party agencies, Backend. *Columns*: Phases, transactions or interactions and periodic events

Criteria and decisions:

- Readable both on print and onscreen easily – hence the decision for horizontal scrolling – to convey a timeline that could be printed on multiple sheets of paper in landscape format.
- Readable type, ideally for A3 size sheets of paper, but also viewable on A4. Used a Google open font – *Strait*, which is a condensed typeface and readable in small size.
- Easy to understand structure and comprehensive.
- Modifiable by other team members at later points in time, hence used an open source software – *Dia* rather than Adobe tools.
- Number the steps for easier reading and referring to steps.

Outcome: Figure 1 shows the final output of the map that can be printed on three A3 (or A4) size sheets of paper.

We also created alternative shorter 1-page versions of the process to be used in presentation material (figure 1b and 1c).

c. Service Design exercise on the operations Map

As I had mapped the operations along the lines of Customer Journey map and Service Blueprint maps, I additionally attempted an exercise of identifying gaps and opportunities. This was done in a quick-and-dirty way rather than the recommended team approach where one has to document real experiences (figure 2). I was unable to meet customers and study actual experiences along the journey as all artefacts that were interactions were yet in development and design stage. Hence the exercise was based on a projection of the customer's actions, thoughts and feeling across the touchpoints in time and place.

Outcome:

Based on the analysis of the existing map, the following were suggested:

- Need for education material/infographics.
- Sending of SMS confirmation at more points.

Fig. 3: Breakdown on stickers during blood sample collection

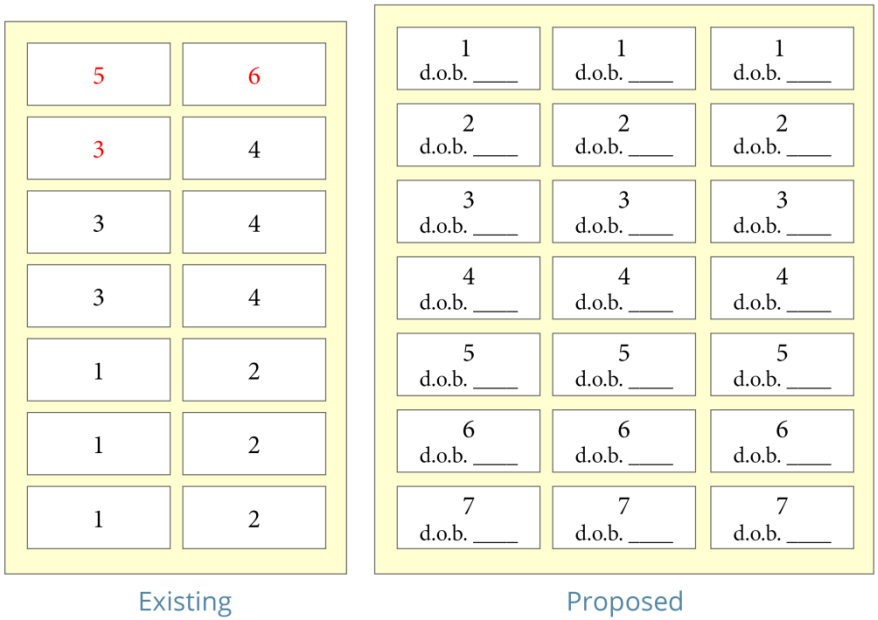


Fig. 4: Existing stickers and proposed change

- Provide (additional) informatory material/leave behind articles at consultation stage rather than at blood collection stage.
- Alternative to blood collection, if possible.
- Provide periodic additional information relevant to the consumers genetic data, based on new research findings

d. Blood sample collection process

I participated in a genetic test for myself, which was offered as a complementary service. I did not get an opportunity to do a contextual study of the process for other customers. However, with the opportunity of participating in the service, I was able to observe some breakdowns that could be improved by better communication design. The following are some of the key observations and suggestions:

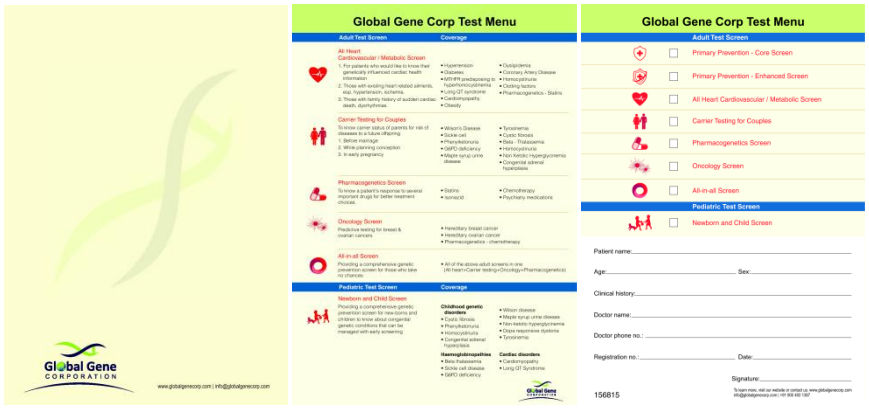
a. **Pre-meeting phone call** – the phlebotomist called up to confirm half an hour prior to sample collection. It **had me confused as I was expecting a call from Global Gene Corp rather than a third party**.
b. **Stickers** - The phlebotomist mistakenly
    i. Entered details on the stickers **on different serial numbers** instead of a triplet of the same number.
    ii. Entered **name along with date of birth**.

Opportunities: I felt it was not the phlebotomist's fault even though he was trained/instructed to use the same serial number, and not enter name for confidentiality reasons. With the current layout of the stickers (figure 3), these errors are bound to happen. He may also not understand/be concerned about confidentiality and had entered the name so that there may not be confusion as to whose blood sample it is. The following was proposed:

    i. **Redesigned stickers:**
        a. **Have three stickers in a row with the same serial number** (figure 4).
        b. **Mention what field need to be entered** (date of birth, leaving no space for additional info) (figure 4)
    ii. **Provide a sheet of clear instructions** that are to be read before visiting the customer. They can be **graphical** rather than the current textual ones (and verbal training) which are prone to misinterpretation/forgetfulness. (This could be the cover sheet for the sticker booklet)
c. **Process of collection** - phlebotomist tied the tourniquet first and started preparing, leaving me in an **uncomfortable state for a long time**, and also said a few times saying that it will hurt a little, which made me **anxious**. They should focus on making it least uncomfortable to the customer.

Fig. 5: Brochures for doctor

Fig. 6: Brochures for consumers



(a) (b) (c)

Fig. 7. a) Test requisition form booklet cover, b) Reference Information sheet for doctors regarding the various test panels offered by the company, c) Test requisition form to be signed by the customer.

Fig. 8. Envelope-in-envelope containing an invitation to try out the service of genetic testing.

Note: These graphics were designed by a third-party design agency; my role was to guide through critique and feedback.

e. Critique and feedback for design of artefacts

This work primarily involved communicating with a design agency for critique and feedback of the design of artefacts such as brochures for doctors, brochures for customers, the test requisition form, information sheet of test panels, special invites.

My role was to assess, critique and provide feedback for the various designs, so that they were consistent in design and visual language in terms of layout, chunking of information, communication, aesthetics, and so that they represented the company and its philosophy – e.g. the choice of images, icons, type, colours, language, terms, etc. The criteria primarily was to have a sophisticated look that could attract customers who could afford the service, convey that the company is well established, convey the importance of preventive healthcare as against traditional post-symptom diagnosis, and to convey the key differentiators namely the Indian focus, specific tests whose results can lead to treatment, and the ease and comprehensiveness of the test report – which can be easily read by customers, as well as detailed enough to support decisions by the physician.

Doctor Brochure and Customer Brochure

The doctor brochure (figure 5) was to be given to doctors that would be in using genetic testing approach, and customer brochures (figure 6) were to be given to potential consumers of the service.

Test Requisition Form and Information on Test Panels

This was a booklet (figure 7) for doctors containing a tear out form to be given to the patient when they recommend a genetic test. The work involved assessing and guiding the information structure in the sheets, use of consistent icons, visual language and layout.

Special Invites

Special invites (figure 8) were designed to invite a select few customers to try out genetic testing. The invites were intended to invoke some interaction by the receiver so that it holds their attention, yet not being too disruptive. The idea was to have envelopes within envelopes like a Chinese puzzle, with the key message on each envelop – about preventive health care. I had to critique and assess the designs.

f. Evaluation of website

I conducted a quick evaluation the recently redesigned website. The evaluation was based on key questions for two types of users – consumers and doctors interested in genetic testing:

1. Customers
- What is genetic testing, and what are the benefits for me?
- How do I avail of the service?
- How much will it cost me?
- What tests are available?
- Is the company reputed? Is it good to do my tests here?

2. Clinicians
- How do I participate?

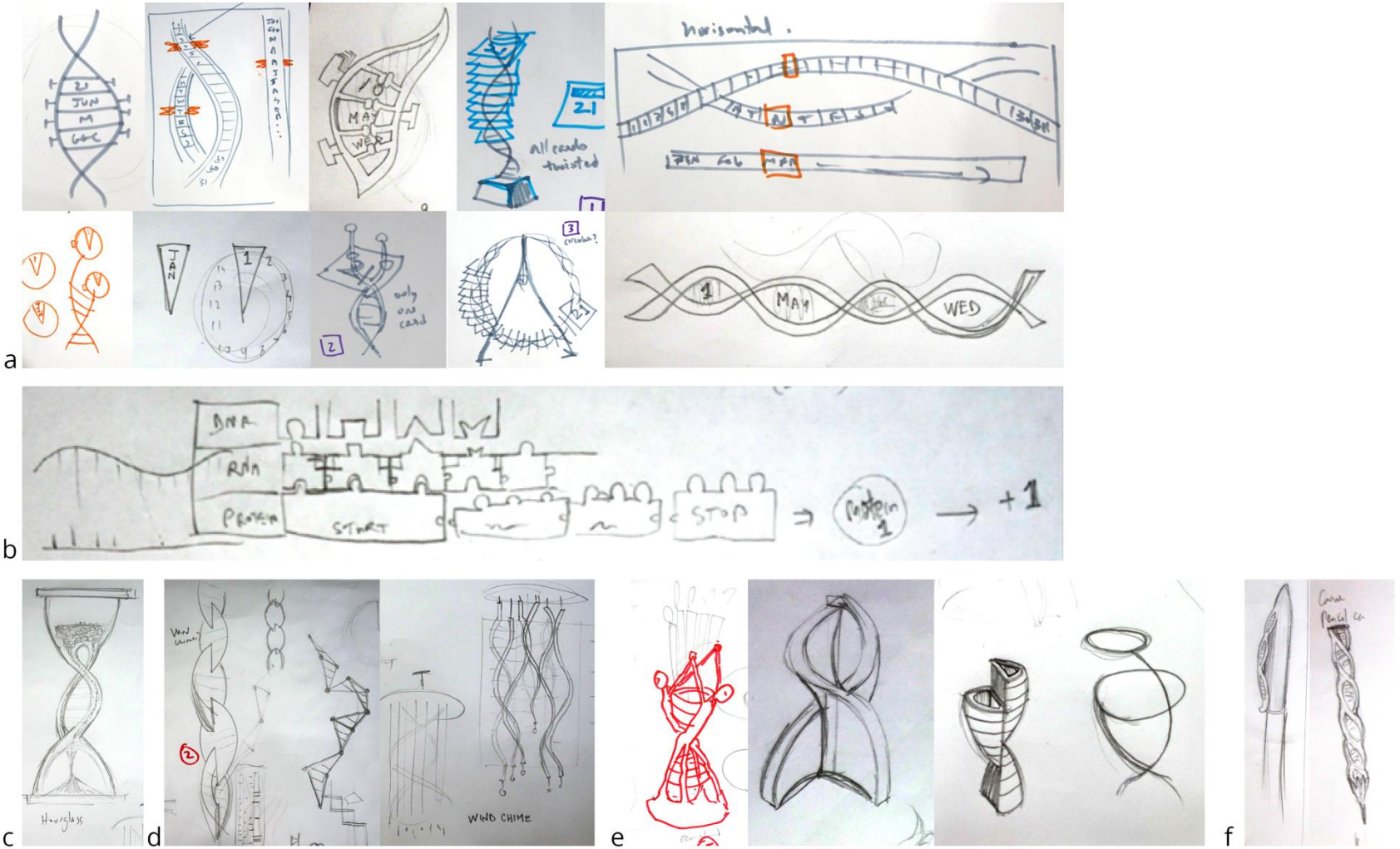


Fig. 9) Sketches of design explorations for a keepsake based on the theme of genetics (a) calendars, (b) protein building game, (c) sand timer, (d) wind chimes/jigsaw-like snap-on DNA strand, (e) pen stand/sculptures, (f) pen/pen-cap

- How do I access articles on genetics?
- What tests are available?

Key findings: The website was fairly well designed. Other than content, there were a few improvements that could be done as follows:

- Use terms consistently – e.g. different terms used for the test panels.
- Improve instructions to users on how to avail the service – exact procedure did not seem very clear.
- Improve responsiveness of website for various screen sizes – the website was released in phases and was eventually made responsive.
- Improve Information architecture – i.e. finding information in the right sections.

g. Ideation for keepsake

After initial user engagement for collecting a blood sample for the test, there is considerable gap of a few weeks in engagement. In this period the genetic tests are done, results are interpreted, and a comprehensive report is made. As there is a lack of user engagement during this period, it was decided to have a non-intrusive engagement with the consumers thanking them, and informing them as soon as the tests are done that the reports would soon be sent.

The brief here was to design a cost effective gift item that the consumer could use for its functionality, or like for its aesthetics. At the same time it should convey an idea of genetics and should invoke conversation or interest by others who come across it. It could be a digital or real object.

Approach: I began with mindmaps on various possible categories of ideas (signature or identity based; mathematics or fractal like art; DNA art; stickers stationery and conventional gift items; or digital objects on the internet and social media, games for children) and another mindmap based on where the object could be used (office, home, living room, doors, car, college, online)

Explorations: At first, I spent some time exploring the options of puzzles or toys with a genetic theme, or board game for children that could educate on genetics. I studied existing online games and educational material. One possibility was to teach the role of genes in the process of making proteins in the body. I also studied DNA art available commercially. Various other ideas were sketched and discussed.

(Figure 9) highlights the primary concepts from the exercise. We settled on one of the ideas involving an origami strand of DNA that would be sent pre-folded in an envelope/box, with a ‘thank you’ message (figure 10).

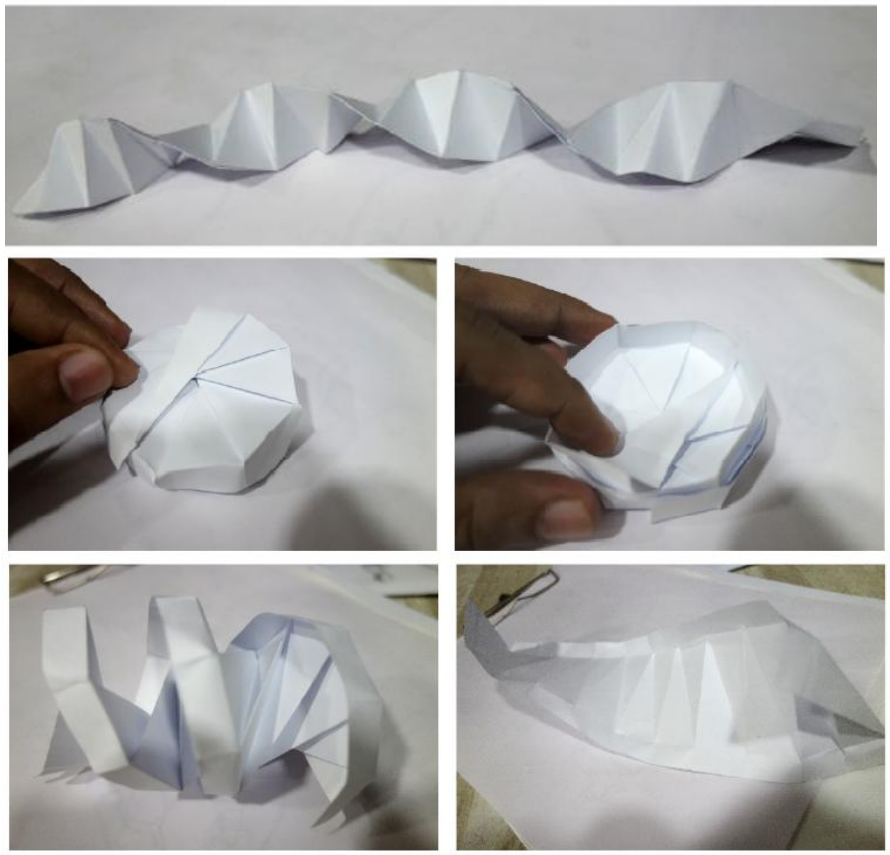


Fig. 10) Origami explorations of folded DNA double helix structure that can be unfolded to read a ‘thank you’ message.

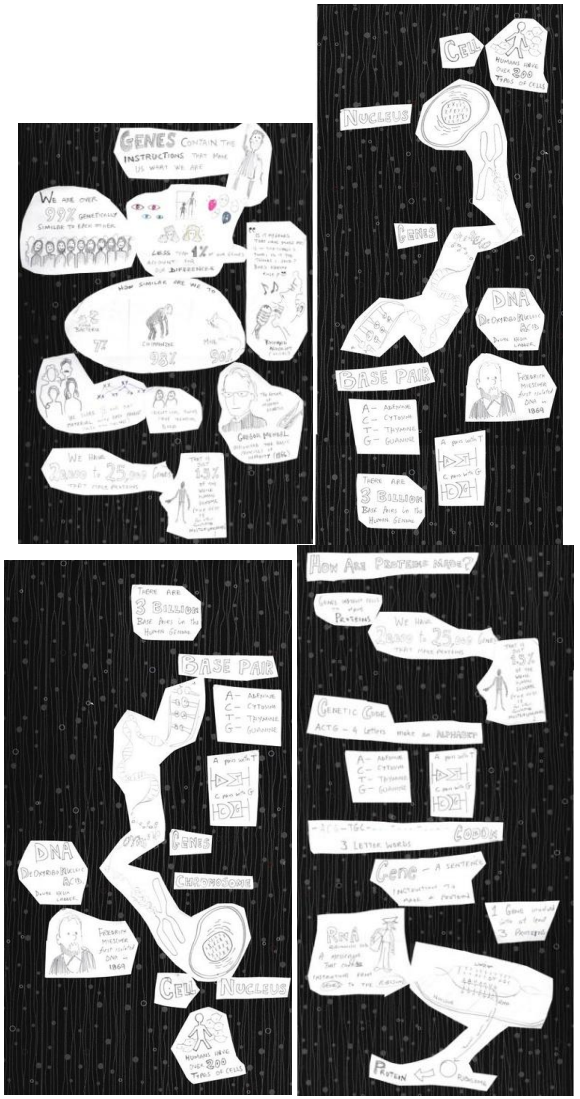


Fig. 11) Sketched infographics and initial drafts of the basics of genetics and genetic testing.

h. Infographics and educational material

infographics

One of the important concerns was that there is a lack of awareness among Indians including customers and doctors. Hence the website provides a lot of resource material. The information is currently highly technical. Hence to make the information more accessible it was decided to tone down the content through infographics. Based on my study of genetics I planned a series of infographics as follows:

- Basics of genetics and DNA
- Genetic testing and diseases
- Benefits of prevention vs diagnosis
- Genetics and diseases - related to the various panels
- The Indian scene

I compiled data and facts for the above sections and structured the content. I created sketches for a series of infographics for the basics of genetics. This will be carried forward later to create the final versions. (Figure 11) shows some of the screens of the infographics series.

Presentations

With regards to educational material, I also worked on re-designing and structuring the content of the corporate presentations that are presented to doctors and hospitals by the company.

i. Genetic Test Report

The test report is one of the key artefacts given to the customer and the doctor. It has a comprehensive detailed report of the tests conducted, FAQ, and further action needs to be taken based on doctor's consultation. It has been intentionally been kept easy to read for the consumers, unlike most medical reports which appear cryptic.

My role was to review the design and provide a consistent styling for the test report.

TAKEAWAYS

My takeaways from the internship were a good domain understanding of genetics and its possibilities; thinking both in terms of end users and business; understanding operations of a startup; application of design learning for the communication design of brochures, websites, educational material, and other artefacts.

I hope that in the future with progress in genetics research, preventive and predictive healthcare can improve and be effective manifold. My hopes would be that this technology can reach the common man sooner. It would be good to ponder over how Design can help in reaching better healthcare to people in a cost effective manner.

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