

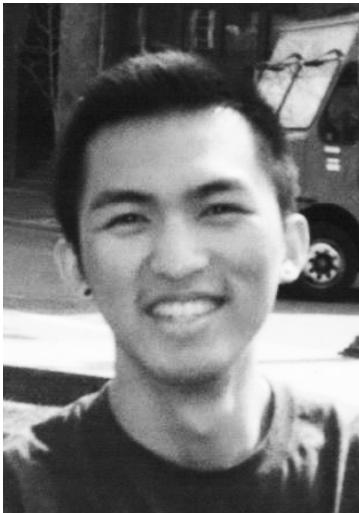


# clinickick



A more efficient platform  
to recruit participants for  
clinical research.

# the team



**Brett  
Harwin**

BS in Mechanical  
Engineering

**Jon  
Hsiung**

BS in Product  
Design Candidate

**Sophie  
Zhao**

BS in Biochem  
Candidate

**Anthony  
Nguyen**

MS in Electrical  
Engineering  
Candidate

BS in Electrical  
Engineering

**Eric  
Dunipace**

MD Candidate

MS in Global  
Health and  
Population

BA in Molecular  
and Cell Biology

# traditional trial model

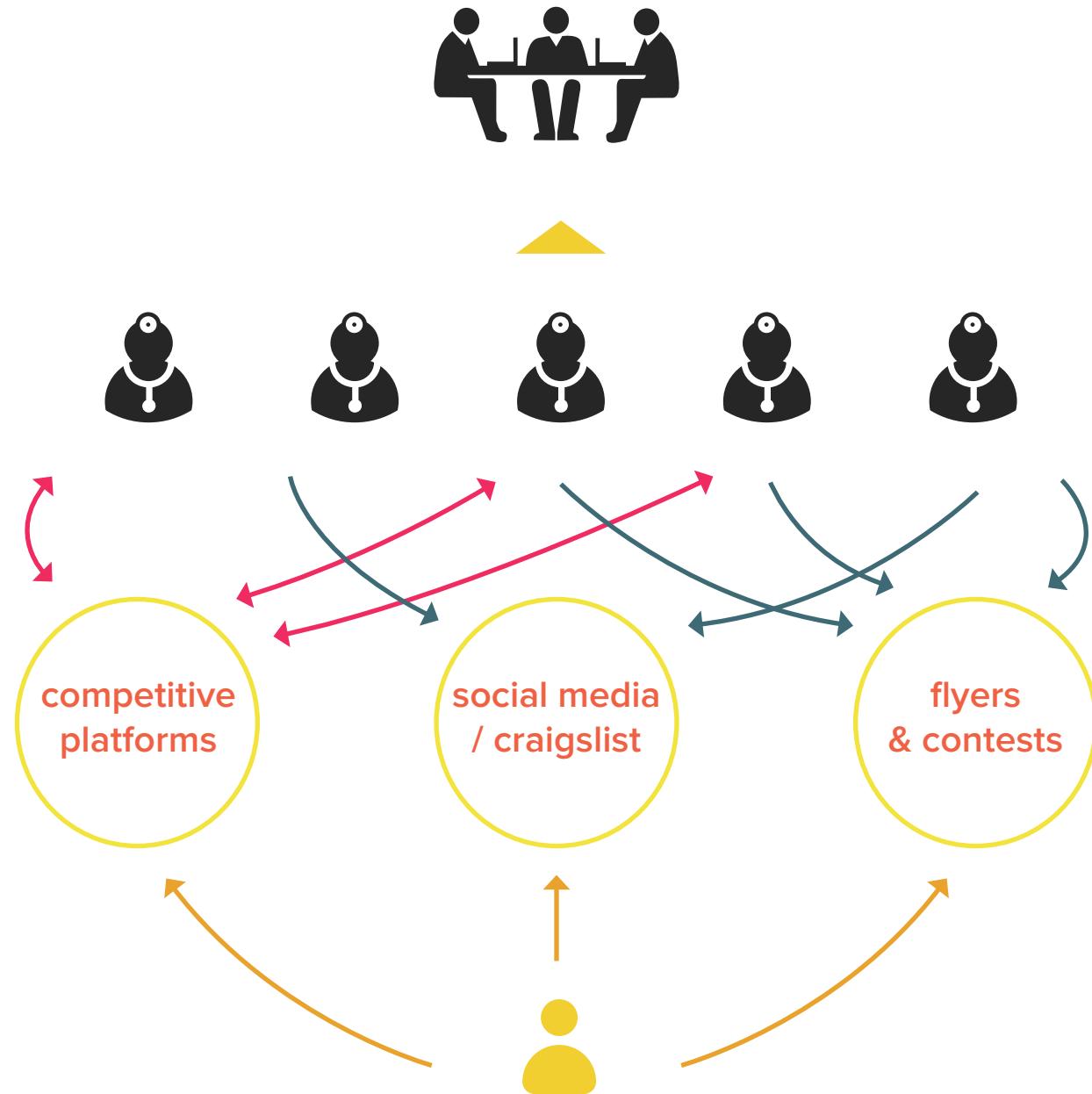
application process

IRB

recruitment process

clinical investigators

clinical participants



# recruitment challenges

In the United States, 27% of all trials fail to enroll any subjects, and worldwide the number is still high at 19%.

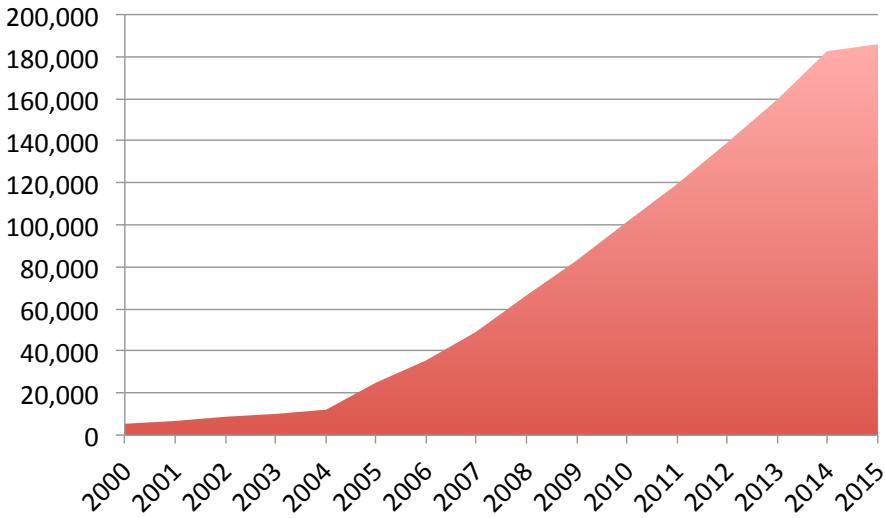
75% of US investigators fail to enroll the target number of subjects.

90% of all clinical trials worldwide fail to enroll patients within the target amount of time and must extend their enrollment period.

*R. B. Gul and P. A. Ali, “Clinical trials: the challenge of recruitment and retention of participants,” Journal of Clinical Nursing, vol. 19, no. 1–2, pp. 227–233, Jan. 2010.*

# market size

## Number of Registered Clinical Trials



PATIENT RECRUITMENT

Pharmafocus

## Accelerating patient recruitment

Advice on how to tackle one of the industry's major problems.



Michael Bowden



Steve Mackenzie-Laurie

The annual cost of developing a drug in the US is \$1 billion; the average cost of patient recruitment is \$1.89 billion. These costs are subject to further increases with each day's delay in bringing the product to market. Industry sources claim that every day lost in development costs \$1 million in lost sales. A recent article claimed that only 15% of clinical trials are completed on time, with over 50% of delays attributed to patient recruitment and 30% of investigator sites failing to recruit a single patient.

The efficiency of the recruitment process is limited by the constrained and investigator sites in specific therapeutic areas, resulting in sponsors targeting a limited pool of patients for their clinical trial. The emergence of site management organisations (SMOs) and investigator networks has also contributed to the potential delays in patient recruitment with preferred supplier agreements resulting in restrictive access to investigators. The problem has been identified by pharmaceutical companies in the past of not giving due prominence to the development and execution of patient recruitment strategies as an integral part of the study process. Sponsors and CROs have recognised this fact and the situation is improving; however, it is estimated that only 5% of patients with a particular disease indication ever come forward to participate in clinical trials.

The question, therefore, is how to address the criteria for which there was little background information in the patient population.

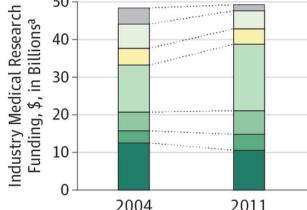
### Realistic expectations

With a well thought out protocol in hand, the next consideration for the success of your recruitment strategy is setting realistic expectations. It is important to get a good sense of the incidence and/or prevalence of the disease in question. This may vary from one geographical area to another, even within a single country, due to different socio-economic factors. You need to consider what variations may occur in patient populations due to cultural or ethnic differences and the spread of individual sites in relation to patient populations, as well as the internal healthcare

- Greater patient exposure to the drug for regulatory submission
- Patient and clinician satisfaction with current therapies
- Competitors with trials in the same disease indication
- Tying up investigational sites by SMOs
- Poor planning or lack of specific recruitment policies
- Lack of patients coming forward for or aware of clinical trials

### Fig 1. Factors causing increased competition for patients

that it works well so long as expectations are made clear at the beginning. It is also important to ensure that regular communication with sites and investigators is encouraged and maintained; this can facilitate the early identification of



Phase of Research	Industry Medical Research Funding, \$, (%), in Billions <sup>a</sup>	Compound Annual Growth Rate, % <sup>b</sup>
Uncategorized <sup>c</sup>	4.2 (9)	-11.9
Phase 4	6.4 (13)	-3.9
Approval	4.5 (9)	-1.2
Phase 3	12.6 (26)	4.9
Phase 2	4.9 (10)	3.3
Phase 1	3.2 (7)	4.1
Prehuman/preclinical	12.5 (26)	-2.3
Overall	48.3	0.3

# current recruitment methods

advertising

craigslist

facebook.

twitter

competitive platforms



# shortcomings of competitors

**TrialX** HOW IT WORKS PATIENTS INVESTIGATORS ENTERPRISES CURE TALK LOGIN JOIN AS PATIENT / INVESTIGATOR

SEARCH TRIALS BY CONDITION  City or Zip  Advanced Search

GET MATCHING TRIALS BASED ON YOUR PERSONAL HEALTH RECORD

Microsoft HealthVault. Is the way to collect, store and share information online. Learn More. Now use your BlueButton file to get matching clinical trials needs you to sign in!

BROWSE BY TRIAL CATEGORIES

- COPD Clinical Trials
- Breast Cancer Clinical Trials
- Asthma Clinical Trials
- Asthma Clinical Trials
- Multiple Myeloma Clinical Trials
- Pancreatic Cancer Clinical Trials
- More...

TRIALX FACTS

- > 7,000+ ongoing clinical trials
- > 100,000+ trial searches
- > 15,000+ volunteers
- > 10,000+ connections made

Join the Movement. Help Cure Disease.

TRIALX SERVICES

- > Treatment Search New!
- > Doctor Search
- > Twitter App
- > Community
- > Clinical Trial Registration
- > Trial Widget
- > Use your Google Health account
- > Use your Microsoft HealthVault account

[more...](#)

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Interact ↓

**EmergingMed** MY ACCOUNT

ABOUT US ABOUT CLINICAL TRIALS OUR PARTNERS MEDICAL DICTIONARY

Welcome to the EmergingMed Navigator. Our Clinical Trial Specialists will help you quickly find the right clinical trials that match your specific diagnosis, stage, and treatment history.

SEARCH BY Phone **1.877.601.8601** 9:00 AM - 5:00 PM ET (M-F)

SEARCH Online Which trials interest you? Select a condition...

Se habla Español

Find Cancer Clinical Trial Options

When to Search

Step 1: Create a profile online or by phone to find clinical trials that match your specific diagnosis, stage and treatment history.

Step 2: Review your study matches and contact specialists that interest you from the national database.

Step 3: Connect with a Clinical Trial Navigator to discuss results and stay informed when new matches arise, and to make sure you know when your next opportunity to enroll will arise.

**ePatientFinder** Home Platform Company News Contact Us Login

Platform for physicians

Connect your patients with life-changing treatments

Advanced Treatment Options Compatible with Your Existing EHR System Three-tier Matching Process

## ClinicalTrials.gov

A service of the U.S. National Institutes of Health

ClinicalTrials.gov is a registry and results database of publicly and privately supported clinical studies of human participants conducted around the world. Learn more [about clinical studies](#) and [about this site](#), including relevant [history, policies, and laws](#).

Find Studies ▾    About Clinical Studies ▾    Submit Studies ▾    Resources ▾    About This Site ▾

ClinicalTrials.gov currently lists 188,677 studies with locations in all 50 states and in 190 countries.

Text Size ▾

### Search for Studies

Example: "Heart attack" AND "Los Angeles"

[Advanced Search](#) | [See Studies by Topic](#)

[See Studies on a Map](#)

### Search Help

- [How to search](#)
- [How to find results of studies](#)
- [How to read a study record](#)

### Locations of Recruiting Studies



Non-U.S. Only (53%)  
U.S. Only (41%)  
Both U.S. and Non-U.S. (6%)

Total N = 35,107 studies  
Data as of April 20, 2015

- [See more trends, charts, and maps](#)

### Learn More

- [ClinicalTrials.gov Online Training](#)
- [Glossary of common site terms](#)

[For the Press](#)

[Using our RSS Feeds](#)

### For Patients & Families

- [How to find studies](#)
- [See studies by topic](#)
- [Learn about clinical studies](#)
- [Learn more...](#)

### For Researchers

- [How to submit studies](#)
- [Download content for analysis](#)
- [About the results database](#)
- [Learn more...](#)

### For Study Record Managers

- [Why register?](#)
- [How to register study records](#)
- [FDAAA 801 Requirements](#)
- [Learn more...](#)

[HOME](#)

[RSS FEEDS](#)

[SITE MAP](#)

[TERMS AND CONDITIONS](#)

[DISCLAIMER](#)

[CONTACT NLM HELP DESK](#)

# clinicaltrials.gov

## Detailed Description:

### OBJECTIVES:

- To determine protein and/or RNA expression patterns capable of predicting tumor response to therapy in tumor tissue samples from patients with lung cancer or suspected of having lung cancer.
- To characterize the genes and proteins found to be predictive of response in order to help elucidate the molecular biology underlying cancer chemosensitivity.
- To evaluate DNA mutations found within the lung cancer sample which may be predictive of response or resistance to certain therapeutic agents.

OUTLINE: Patients undergo collection of tumor tissue by percutaneous fine needle aspiration, core biopsy, thoracentesis, or during any medically indicated procedure involving removal of lung cancer tissue. Tissue samples are analyzed by a variety of techniques, including DNA sequencing, RNA sequencing and expression levels, protein assessment [by immunohistochemistry, western blot, Matrix-assisted laser desorption/ionization time of flight mass spectrometry (MALDI-MS)]. The goal of these studies is to identify of gene mutations, gene expression levels, and proteins predictive of treatment response. Blood samples are also collected to obtain normal DNA for analysis.

After completion of study, patients will be followed until their death.

## ► Eligibility

Genders Eligible for Study: Both

Accepts Healthy Volunteers: No

Sampling Method: Non-Probability Sample

## Study Population

People who have or may have lung cancer.

## Criteria

### Inclusion criteria

- Diagnosis of suspected lung cancer or lung cancer

### Exclusion criteria

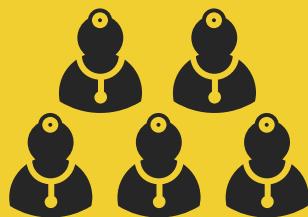
- Inability to undergo therapy

## ► Contacts and Locations

Choosing to participate in a study is an important personal decision. Talk with your doctor and family members or friends about deciding to join a study. To learn more about this study, you or your doctor may contact the study research staff using the Contacts provided below. For general information, see [Learn About Clinical Studies](#).

# our approach

application  
process



clinical  
investigators

recruitment  
process



IRB

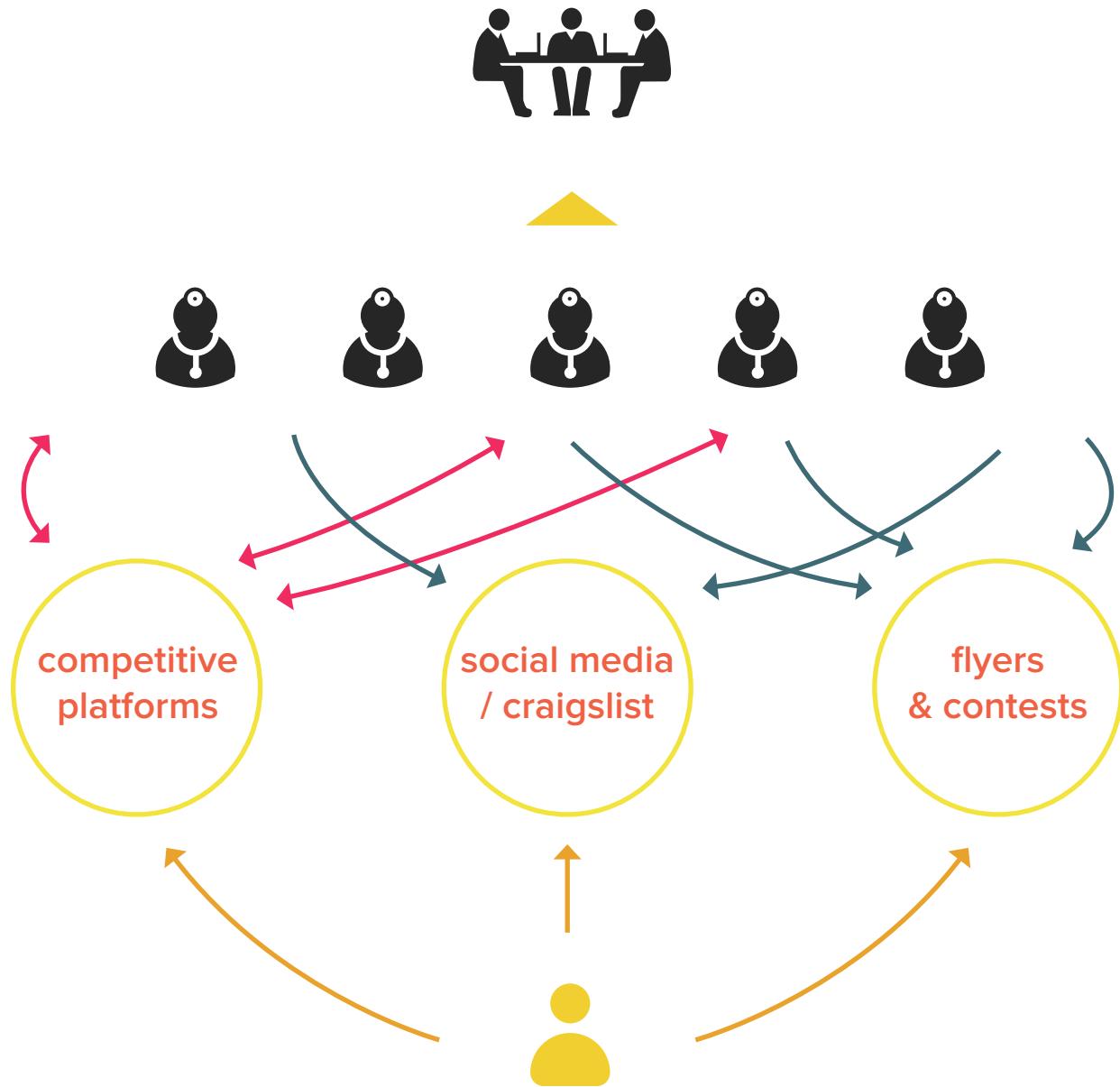


clinikick

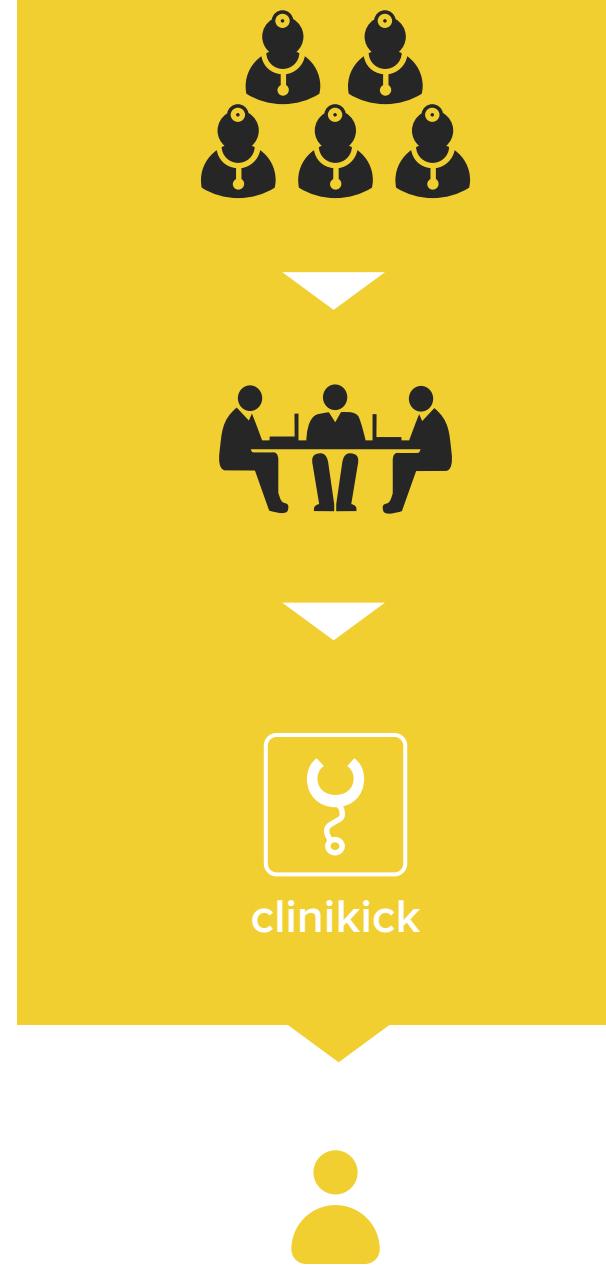


clinical  
participants

## traditional trial model



## our approach



# linking to IRB

## Terms & Conditions

### 1. This Agreement

1.1 **Status of this agreement:** This agreement is the commercial equivalent of an agreement for accommodation(s) in a hotel. The whole of the Center remains in Regus' possession and control. **"THE CLIENT"** ACCEPTS THAT THIS AGREEMENT CREATES NO "RENTAL" INTEREST, LEASEHOLD ESTATE OR OTHER REAL PROPERTY INTEREST IN THE CLIENT'S FAVOUR WITH RESPECT TO THE ACCOMMODATION(S). Regus is giving the Client the right to share with Regus the use of the Center on these terms and conditions, as supplemented by the House Rules, so that Regus can provide the services to the Client. This agreement is personal to the Client and cannot be transferred to anyone else. This agreement is composed of the front page describing the accommodation(s), the present terms and conditions and the House Rules.

1.2 **Comply with House Rules:** The Client must comply with any House Rules which Regus imposes generally on users of the Center. The House Rules vary from country to country and from Center to Center and these can be requested locally.

1.3 **Duration:** This agreement lasts for the period stated in it, and then will be extended automatically for successive periods equal to the current term but no less than 3 months (unless legal renewal limits apply) until brought to an end by the Client or by Regus. All periods shall run to the last day of the month in which they would otherwise expire.

1.4 **Bringing this agreement to an end:** Either Regus or the Client can terminate this agreement at the end date stated in it, or at the end of any extension or renewal period, by giving at least three months written notice to the other. However, if this agreement, extension or renewal is for three months or less and either Regus or the Client wishes to terminate it, the notice period is two months or (if shorter) one week less than the period stated in this agreement.

1.5 **Ending this agreement immediately:** To the maximum extent permitted by applicable law, Regus may put an end to this agreement immediately by giving the Client notice and without need to follow any additional procedure if (a) the Client becomes insolvent, bankrupt, goes into liquidation or becomes unable to pay its debts as they fall due, or (b) the Client is in breach of one of its obligations which cannot be put right or (c) Regus have given the Client notice to put right and which the Client has failed to do so right within fourteen (14) days of that notice, or (c) has tendered, or that of someone at the Center with its permission or invitation, is incompatible with ordinary office use.

If Regus puts an end to this agreement for any of these reasons it does not put an end to any outstanding obligations, including additional services used and the monthly office fees for the remainder of the period for which this agreement would have lasted if Regus had not ended it.

1.6 **If the Center is no longer available:** In the event that Regus is permanently unable to provide the services and accommodation(s) at the Center stated in this agreement will end and the Client will only have to pay monthly office fees up to the date it ends and for the additional services the Client has used. Regus will try to find suitable alternative accommodation(s) for the Client at another Regus Center.

1.7 **When this agreement ends:** The Client is to vacate the accommodation(s) immediately, leaving the accommodation(s) in the same condition as it was when the Client took it. Upon the Client's departure or if the Client, at its option, chooses to relocate to different rooms within the Center, Regus will charge an Office Restoration Service fee to cover normal cleaning and testing and to return the accommodation(s) to its original state. This fee will differ by country and is listed in the House Rules. Regus reserves the right to charge any property in the Center Regus may dispose of it at the Client's cost in any way Regus chooses without owing the Client any responsibility for it or any proceeds of sale. When a Client vacates its accommodation(s) invariably Regus continues to receive the Client's calls, faxes, telephone calls and visitors, in order to professionally manage the redirection of the Client's calls, faxes and visitors. Regus charges a optional Business Continuity Service. This service lasts for three months after the end of the date of this agreement. If in the event that there are no calls, mail, faxes or visitors this service will not be applied. This fee is located in the house rules.

4.3 **Insurance:** It is the Client's responsibility to arrange insurance for its own property which it brings in to the Center and for its own liability to its employees and to third parties. Regus strongly recommends that the Client puts such insurance in place.

### 5. Use

5.1 **The Client must only use the accommodation(s) for office purposes.** Office use of a "retail" or "medical" nature, involving frequent visits by members of the public, is not permitted.

5.2 **The Client must not carry on a business that competes with Regus' business of providing serviced office accommodations.**

5.3 **The Client's name and address:** The Client may only carry on that business in its name or some other name that Regus previously agrees.

5.4 **Use of the Center Address:** The Client may use the Center address as its business address. Any other uses are prohibited without Regus' prior written consent.

### 6. Compliance

6.1 **Comply with the law:** The Client must comply with all relevant laws and regulations in the conduct of its business. The Client must do nothing illegal in connection with its use of the Business Center. The Client must not do anything that may interfere with the use of the Center by Regus or by others, cause any nuisance or annoyance, increase the insurance premiums Regus has to pay, or cause loss or damage to Regus (including damage to reputation) or to the owner of any interest in the building which contains the Center the Client is using. The Client acknowledges that (a) the terms of the foregoing sentence are a material inducement in Regus' execution of this agreement and (b) any violation by the Client of the foregoing sentence shall constitute a material default by the Client hereunder, entitling Regus to terminate this agreement, without further notice or procedure.

6.2 **The Client's personal data:** may be transferred outside the European Union where Regus has a Center for the purposes of providing the services herein. Regus has adopted internal rules to ensure data protection in accordance with European regulations.

### 7. Regus' liability

7.1 **The extent of Regus' liability:** To the maximum extent permitted by applicable law, Regus is not liable to the Client in respect of any loss or damage the Client suffers in connection with this agreement, with the services or with the Client's accommodation(s) unless Regus has acted deliberately or negligently in causing that loss or damage. Regus is not liable for any loss as a result of Regus' failure to provide a service as a result of mechanical breakdown, strike, limitation of Regus' interest in the building containing the Center or otherwise unless Regus does so deliberately or is negligent. In no event shall Regus be liable for any loss or damage until the Client provides Regus written notice and gives Regus a reasonable time to put it right. If Regus is liable for failing to provide the Client with any service under this agreement then subject to the exclusions and limits set out immediately below Regus will pay any actual and reasonable expenses the Client has incurred in obtaining that service from an alternative source. If the Client believes Regus has failed to deliver a service consistent with these terms and conditions the Client shall provide Regus written notice of such failure and give Regus a reasonable period to put it right.

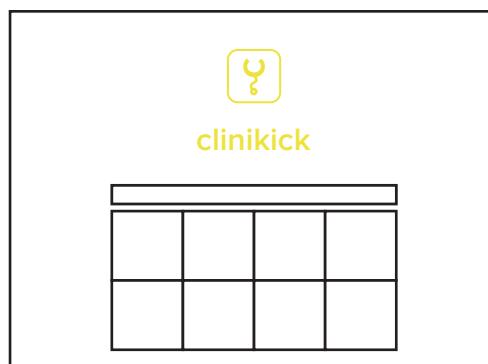
7.2 **EXCLUSION OF CONSEQUENTIAL LOSSES, ETC:** REGUS WILL NOT IN ANY CIRCUMSTANCES HAVE ANY LIABILITY FOR LOSS OF BUSINESS, LOSS OF PROFITS, LOSS OF ANTICIPATED SAVINGS, LOSS OF OR DAMAGE TO DATA, THIRD PARTY CLAIMS OR ANY CONSEQUENTIAL LOSS UNLESS REGUS OTHERWISE AGREES IN WRITING. REGUS STRONGLY ADVISES THE CLIENT TO INSURE AGAINST ALL SUCH POTENTIAL LOSS, DAMAGE, EXPENSE OR LIABILITY.

7.3 **Financial limits to Regus' liability:** In all cases, Regus' liability to the Client is subject to the following limits:

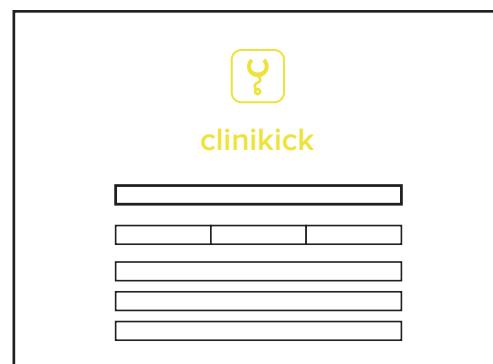


Check this box to allow your clinical study to be posted on Clinickick.

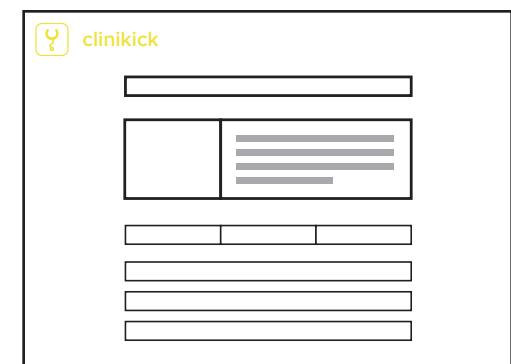
# web prototype wireframes



square grid shows different category filters; filters can also be accessed directly from search bar



search bar and results with column descriptors matching search and search filter labels



click into each result to expand for more detailed descriptions in layman's terms and ways to contact the clinical investigators

# our future vision

The image shows three smartphones side-by-side, each displaying a different screen of the Clinickick mobile application.

- Left Phone (Home Screen):** The screen is primarily yellow. It features a white square icon with a stylized 'K' or wrench symbol inside. Below the icon, the word "clinickick" is written in a white, lowercase, sans-serif font. At the bottom of the screen, a white bar contains the tagline "clinical studies simplified" in a small, orange, sans-serif font.
- Middle Phone (Welcome Screen):** The top bar is yellow and displays the word "Welcome" in white. Below the bar is a circular profile picture of a man with dark hair and blue eyes, set against a yellow background. The text "Hello, Brett!" is displayed in bold black font below the profile picture. Underneath that, the question "What would you like to do today?" is shown in a smaller, gray font. At the bottom of the screen is a yellow navigation bar with two white icons: a magnifying glass on the left and a telephone receiver with an envelope icon on the right.
- Right Phone (Search Results Screen):** The top bar is yellow and displays the text "Search Results" in white. Below the bar, a message indicates "167 Lung Cancer clinical trials found". A list of five clinical trials is displayed, each with a small colored circle (blue, green, red, blue, blue) followed by the trial's title and a truncated description. The trials are:
  - Phase 1b/2 Trial of AMG386 With Pemetrexed and Carboplatin in Non-Small Cell Lung Cancer
  - A Study Of Combined C- MET Inhibitor And PAN-HER Inhibitor (PF-02341066 And PF-00299804) ...
  - A Study of Onartuzumab (MetMAb) in Combination With Tarceva (Erlotinib) in Patients With Met ...
  - A Study of MPDL3280A Compared With Docetaxel in Patients With Non-Small Cell Lung Cancer After ...
  - LDK378 Versus Chemotherapy in ALK Rearranged (ALK Positive) Patients Previously Treated With ...

# development timeline



# platform testing

## **Small scale test with two dozen trials:**

These trials are already approved and also have marketing material approved by the IRB.

We contact these clinical trial investigators in order to obtain their permission to post their information on our platform.

# platform testing

Once the trials are available on website, we launch the service and advertise.

We incentivize the use of our program by offering participants who successfully complete trials a chance to win \$50 gift cards.

Users are asked to complete a short survey regarding their experience with our platform.

# measures of success

**By the end of a month, we have preliminary data to perform the following website data analysis:**

- what users view our platform with (desktop/mobile)
- number of users who viewed our website
- how users got to our website
- which terms were searched for
- which trials were clicked on

**The number of people who respond to the trials on our platform versus other platforms.**

# **sources of funding**

**Current fund is \$1,000 from MedTech Innovation Program.**

## **Future fund options:**

Angel Investors

500 Startups

StartUp Health

Amplify.LA

# **instructors & mentors**

## **Roy Doumani, JD**

Executive Director, Business of Science Center and Professor in Molecular and Medical Pharmacology, David Geffen School of Medicine

## **Wentai Liu, PhD**

Professor in the Department of Bioengineering, Henry Samueli School of Engineering and Applied Science

## **Jennifer McCaney, PhD**

Lecturer, Anderson School of Management

## **Kalyanam Shivkumar, MD, PhD**

Professor of Medicine and Radiology and Director of UCLA Cardiac Arrhythmia Center and EP programs, David Geffen School of Medicine

## **Alex Shen, PhD**

Mentorship and Instructions, MedTech Innovation Fellows

## **Sascha Hasan, PhD, MBA**

Mentorship and Instructions, MedTech Innovation Fellows

## **Kim-Lien Nguyen, MD**

Assistant Clinical Professor, Department of Medicine Member, CTSI

## **Queena Deschene**

ROI Marketing for Healthcare and Wellness

# takeaways

## **Collaboration with IRB reduces work necessary for clinical investigators and IRB**

IRB no longer have to separately review advertisements/advertisement amendments.

Clinikick provides a centralized database for research subject.

**By communicating with the IRB, all clinical studies/research will be listed as well, which is absent from other platforms including clinicaltrials.gov**

## **Clinikick helps institutions make money in two ways**

### *Directly*

Less money spent on recruitment means more money can be spent on phase 1, 2, 3, etc.

### *Indirectly*

Clinikick will lead to more successful clinical research/trials which will lead to more funding from NIH.