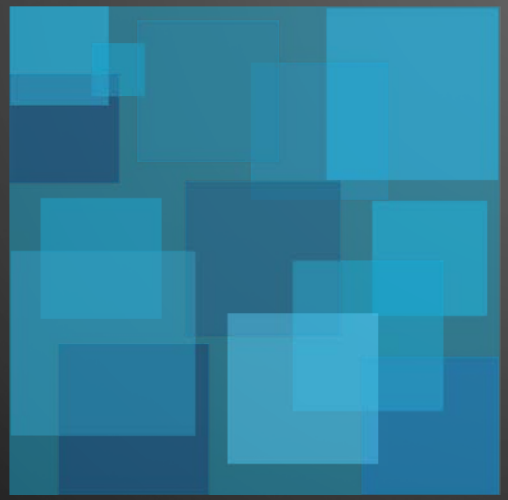


SPATIAL PATH

ENABLING SPATIAL ANALYSIS OF CANCER

TEAM SPATIALPATH

Ruan Medrano, PhD
Cancer immunologist

Shaopeng Yuan
Cancer biologist with experience in therapeutic development

Paula Godoy
Cancer biologist and bioinformatician

Paarth Dodhiawala
Cancer biologist and bioinformatician

Christopher Cowley
Stem cell biologist/ immunologist

SPATiAL PATH

THE PROBLEM

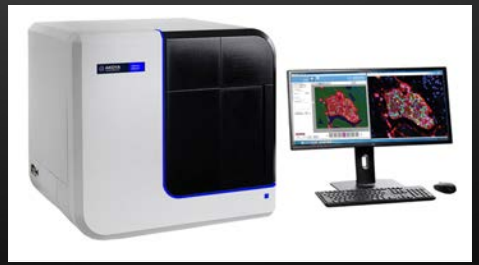
- Current methods used by pathologists to determine histological features of solid tumors lack the depth of profiling capabilities that is required to thoroughly characterize the disease
- Cancer researchers wanting spatial analysis of cells and molecular characterization in tumors require investment in expensive technology
- Clinicians needing more in-depth molecular and cellular characterization of patient tumors lack pathology services to provide this information.

SPATIAL PATH

THE SOLUTION

- Provide a customizable service for the spatial analysis of the tumor tissue to enable cancer research and personalized patient management
- Use CODEX multiplex imaging technology from Akoya Biosciences to visualize 50 or more markers in a tissue section
- Develop and optimize “ready to pick” biomarker panels specific for different types of cancers
- Provide bioinformatics analysis that can assist both researchers and clinicians on the diagnosis and treatment selection of cancer patients

AKOYA BIOSCIENCES®



SPATIAL PATH

SPATIALPATH BUSINESS MODEL

- **Value Creation**
  -Increase accessibility to multiplex imaging technologies for spatial pathology for cancer researcher and clinicians

- **Value Delivery**
  -Start with research scientists and move into the clinic and pathology cores

- **Value Extraction**
  -Apply for initial seed funding
  -Partner with Akoya and antibody companies
  -Establish customer base

SPATIAL PATH

SPATIALPATH SERVICE MODEL

Provide tissue sample

Tissue processing

Select “ready to pick” cancer specific antibody panels

Perform CODEX assay

Spatial data analysis

Data mining to enable personalized medicine

Receive data in user friendly interface

COMPETITIVE LANDSCAPE

- High-throughput microscopy
- Spatial resolution
- Limited to solid tumors

- Mass spectrometry
- High through-put, not limited to solid tumor
- No spatial resolution or imaging

- Histology and microscopy
- Very fast service, current standard
- Low through-put

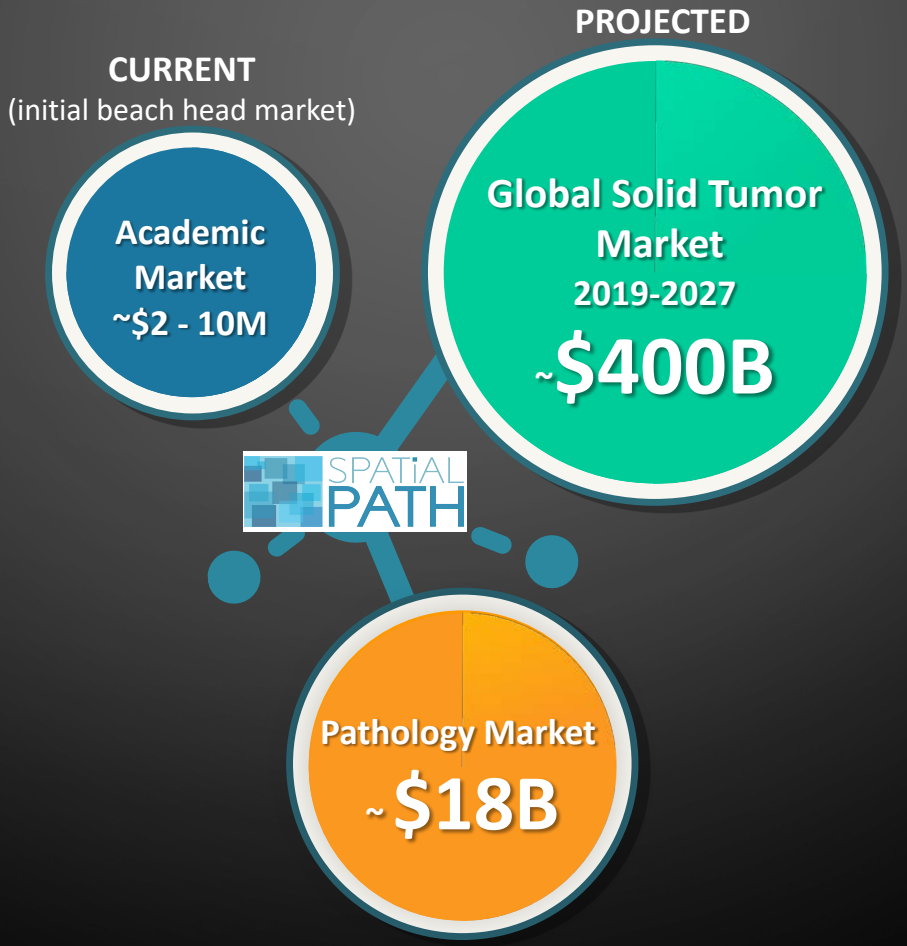
- Histology
- Very fast service, current standard
- No spatial resolution or imaging, low through-put

Multiplex Capability

Personalized Medicine Utility

SPATIAL PATH

MARKET OPPORTUNITY



SPATIAL PATH

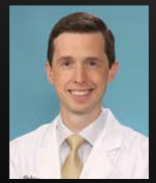
CUSTOMER VALIDATION

Rachel Niec, MD, PhD (Rockefeller University)

- Will reach to a better cellular resolution comparing to current spatial 10X single cell RNAseq technology

Kian H. Lim, MD, PhD (Washington University)

- Will increase utilization of CODEX by scientists largely in part by eliminating burden of running and maintaining the machine and doing complex analysis.
- Anticipates a large clientele
- Antibody panels that can be customized provide flexibility, while maintaining a standardized analysis pipeline.



Charles Kaufman, M.D., PhD.

- Fast turnaround time in order to start therapy ASAP
- Database to offset customer cost.

SPATIAL PATH

TECHNOLOGY VALIDATION


Cell

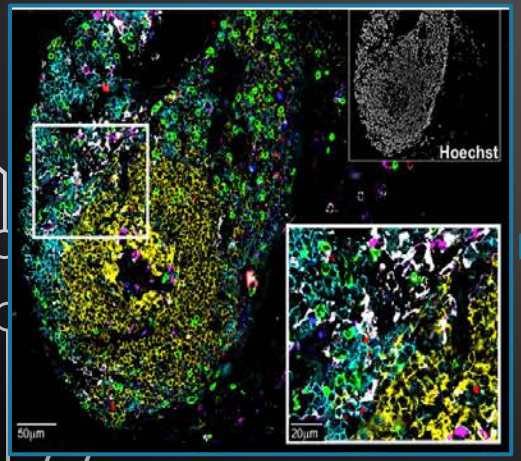
CellPress
OPEN ACCESS

Resource

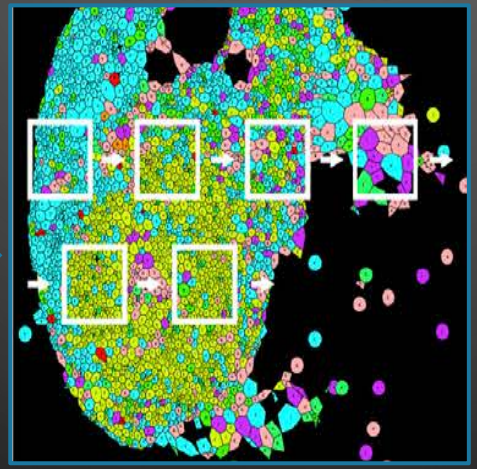
Coordinated Cellular Neighborhoods Orchestrate Antitumoral Immunity at the Colorectal Cancer Invasive Front

Christian M. Schürch,[1,2,6,*] Salil S. Bhate,[1,2,3,6] Graham L. Barlow,[1,2,6] Darci J. Phillips,[1,2,4,6] Luca Noti,[5] Inti Zlobec,[5] Pauline Chu,[1,2] Sarah Black,[1,2] Janos Demeter,[1] David R. McIlwain,[1,2] Nikolay Samusik,[1] Yury Goltsev,[1,2] and Garry P. Nolan[1,2,7,*]

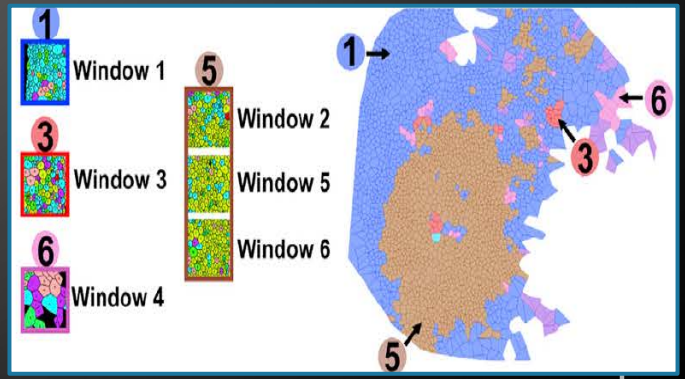
CODEX MULTIPLEX IMAGING



SPATIAL ANALYSIS



CELLULAR NEIGHBORHOOD IDENTIFICATION



SPATIAL PATH

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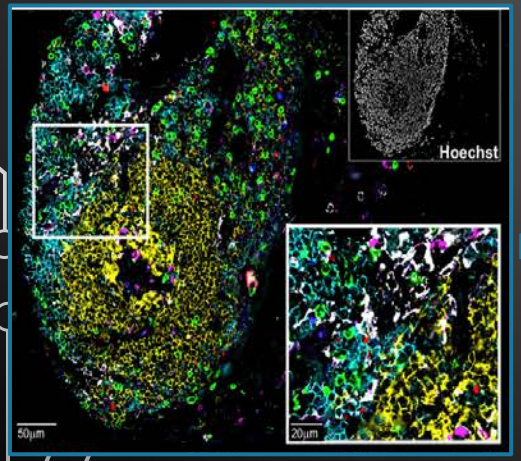

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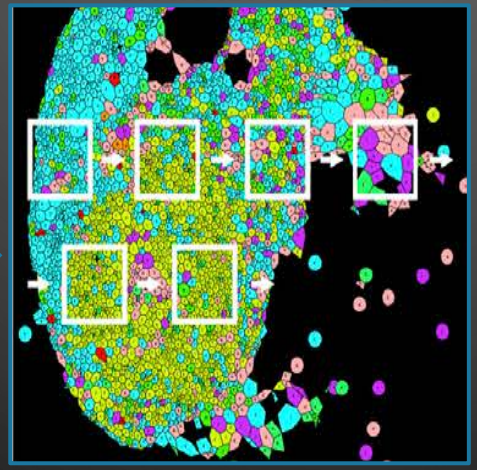
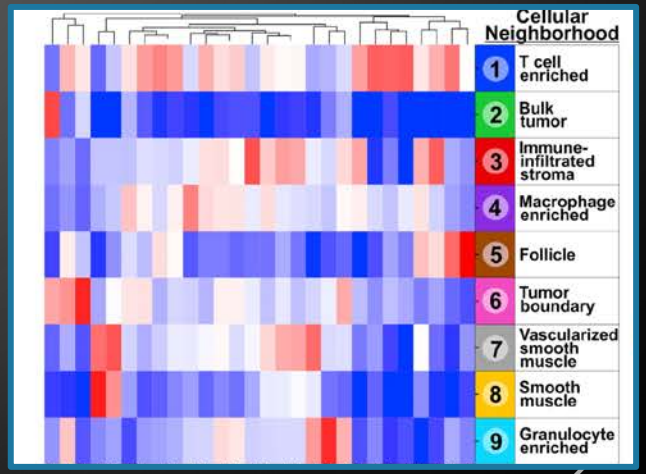


CELLULAR NEIGHBORHOOD COMPOSITION



SPATIAL PATH

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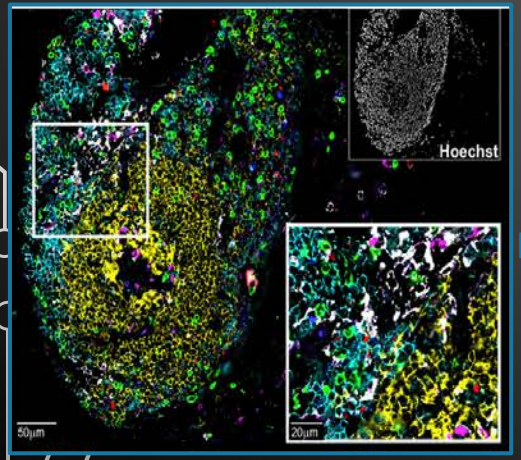
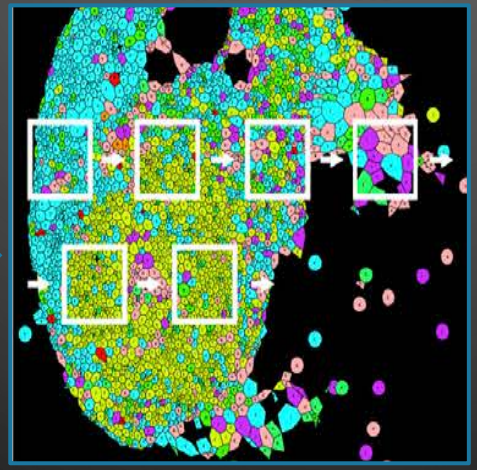
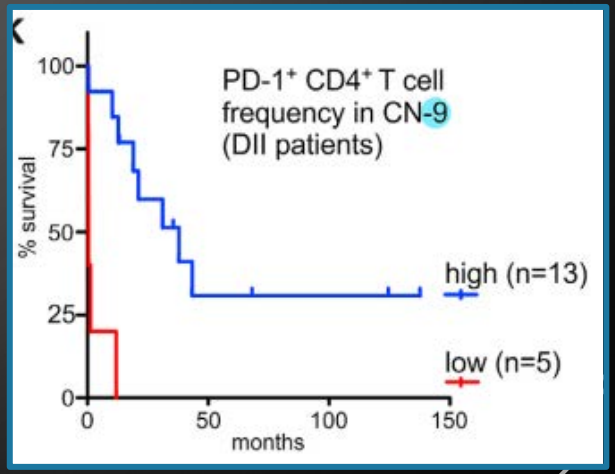


SPATIAL ANALYSIS



OVERALL SURVIVAL



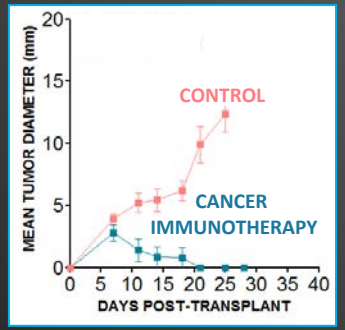
SPATIAL KNOWLEDGE TRANSLATES TO PATIENT'S PROGNOSIS

SPATIAL PATH

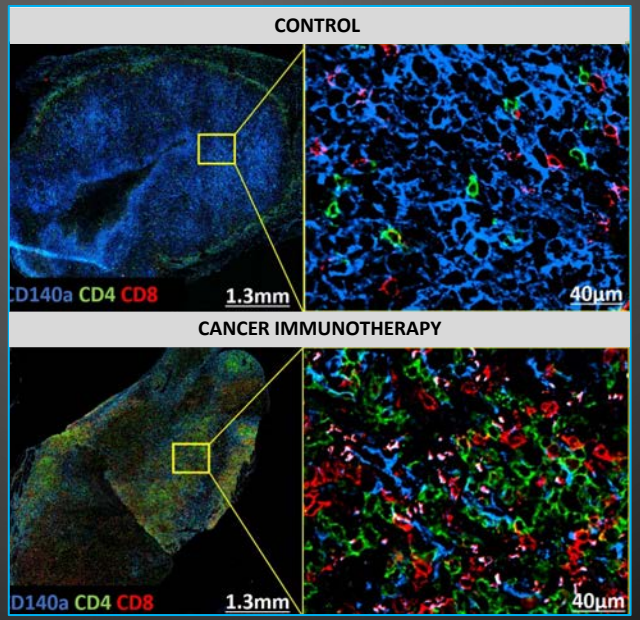
TECHNOLOGY VALIDATION

SPATIALPATH CANCER IMMUNOTHERAPY STUDY

CANCER IMMUNOTHERAPY



SPATIALPATH CODEX VALIDATION



SPATIALPATH RESPONSE TO IMMUNOTHERAPY BIOMARKER PANEL

CD90.2 (30-H12)	F4/80 (BM8)
CD45 (30-F11)	iNOS (W16030C)
CD45R/B220 (Ra3-6B2)	FOXP3 (MF-14)
IgM (RMM-1)	PD-1 (RMP1-30)
IgD (11-26c.2a)	CX3CR1(SA011F11)
CD38 (90)	ICOS (C398.4A)
CD24 (M1/69	PDCA-1 (927)
CD140A (APA5)	Ly6G (1A8)
CD5 (53-7.3)	CD40 (3/23)
CD8a (53-6.7)	
CD31(MEC13.3)	
CD44 (IM7)	
MHC II (M5/114.15.2)	
CD19 (6D5)	
CD21/35 (7E9)	
CD4 (RM4-5)	
Ki67 (B56)	
CD169 (3D6.112)	
TCRb (H57-597)	
CD49f (GoH3)	
CD11c (N418)	
CD3 (17A2)	

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Cancer immunologist

Shaopeng Yuan
Cancer biologist with experience in therapeutic development

Paula Godoy
Cancer biologist and bioinformatician

Paarth Dodhiawala
Cancer biologist and bioinformatician

Christopher Cowley
Stem cell biologist/ immunologist

Additional personnel required:

Bioinformatician/ computational biologist

CODEX technician

Web developer

Administrative staff

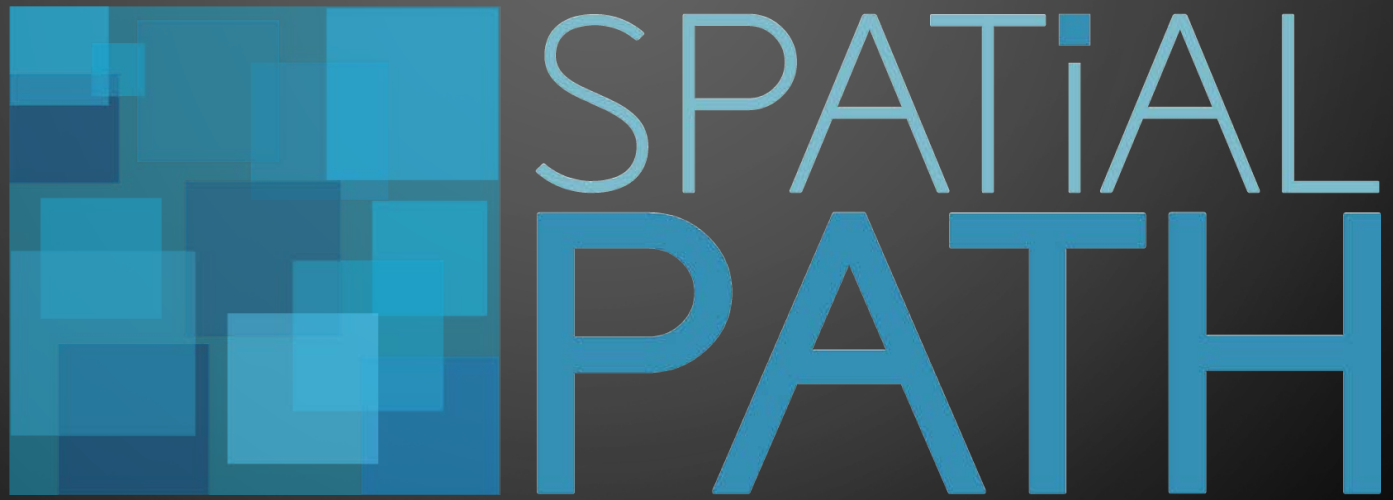
SPATIAL PATH

USE OF FUNDS

Specific Activity	Funds Required	Deliverable/Risk Mitigation	Estimated Delivery Date
Acquire CODEX system	$500,000	Required for service, additional funding, can rent from WashU lab	April 2021
Bioinformatician	$100,000	Required for data processing, in-house	January 2021
Technician	$50,000	Required for sample processing, in-house	March 2021
Facilities	$30,000	Required for sample processing, rent academic space	March 2021

SPATIAL PATH

Thank you!

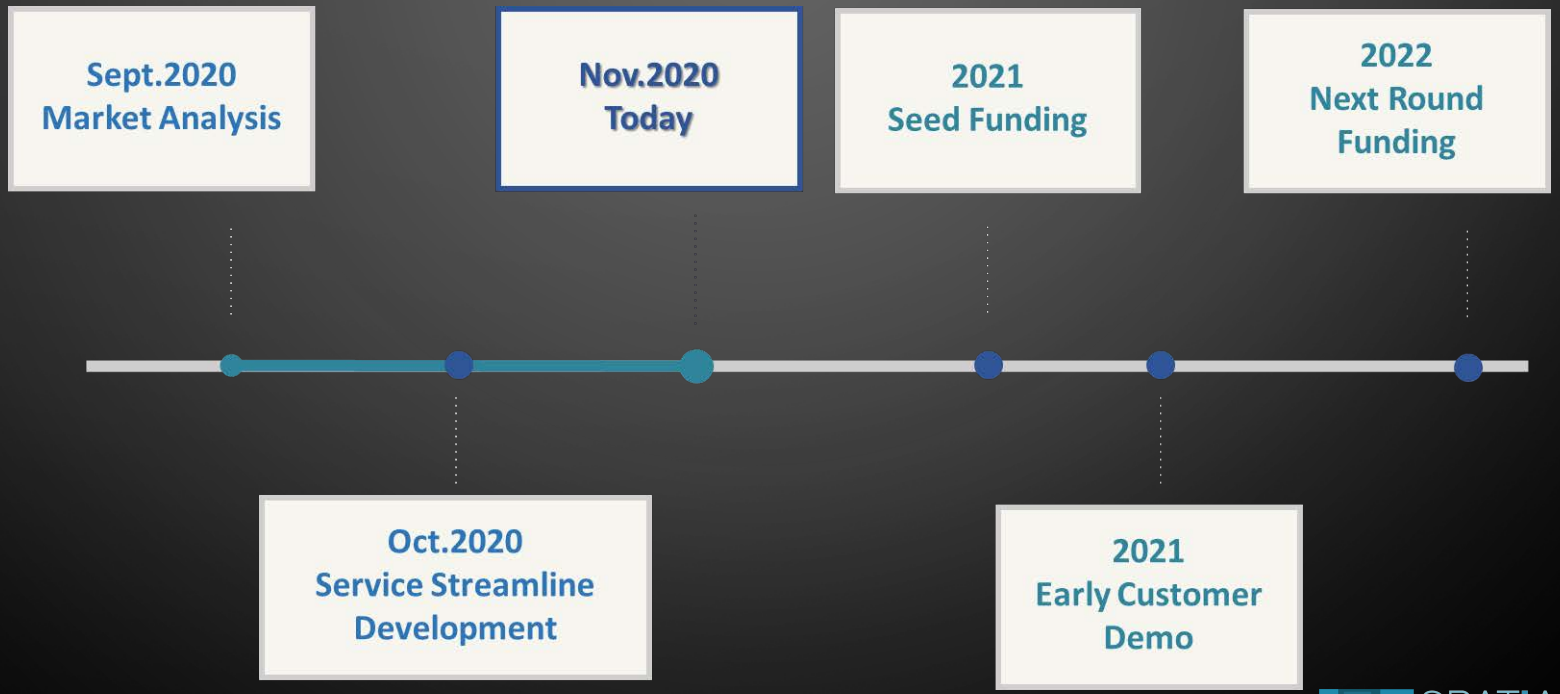


RISK ASSESSMENT

Risk factor	Risk mitigation strategy
Cost of CODEX machine	Additional funding
Reliance on a new company	Partnership, tech development
Lack of customer interest	Survey lab interest
Recurring Costs - reagents	
Initial seed funding	SBIR grants

SPATIAL PATH

TIMELINE



SPATiAL PATH