## Japan's Bioeconomy Strategy and Greater Tokyo Biocommunity



 Prof. Yoshiaki Tsukamoto
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# Distribution of **Nobel Prize Laureates** by Country (from 2000 to 2022)

USA	75		
<b>United Kingdom</b>	24		
Japan	20		
Germany	13		
France	10		
🗢 Israel	6		
Canada	4		
Russia	4		
Switzerland	4		
🏝 Australia	3		
Italy	3		
Hereit Norway	2		
Sweden	2		
Ireland, China, Turkey,			
Belgium, Netherlands,			
Denmark, Austria			
New Zealand 1 each			

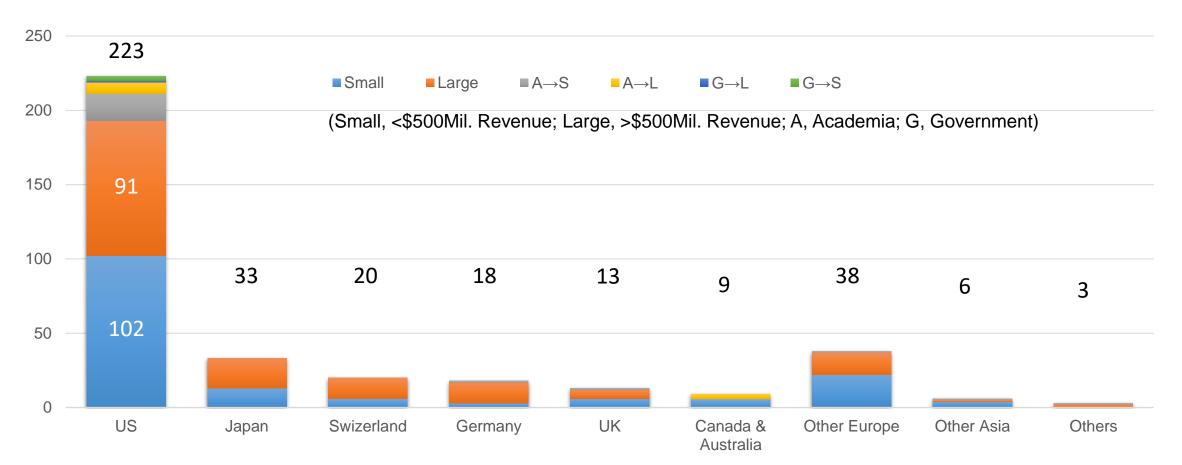


\*Total number of three fields; [Physics, Chemistry, and Physiology or Medicine]

Counted by JBA based on the information on Novel Prize.org

# Pharmaceutical Approvals by Geographic Location & Type of IP Originator 2011~2020(N=363)

Japan occupies the second place as the country with the highest number of FDA-approved pharmaceutical products.



Report "The US Ecosystem For Medicines, How new drug innovations get to patients, Government, Academia, Small firms, and Large firms, 2011 – 2020." Vtal transformation LLC, Dec 5, 2022.

## The Top 100 Science & Technology Cluster 2022



#### (only Top 10 were shown)

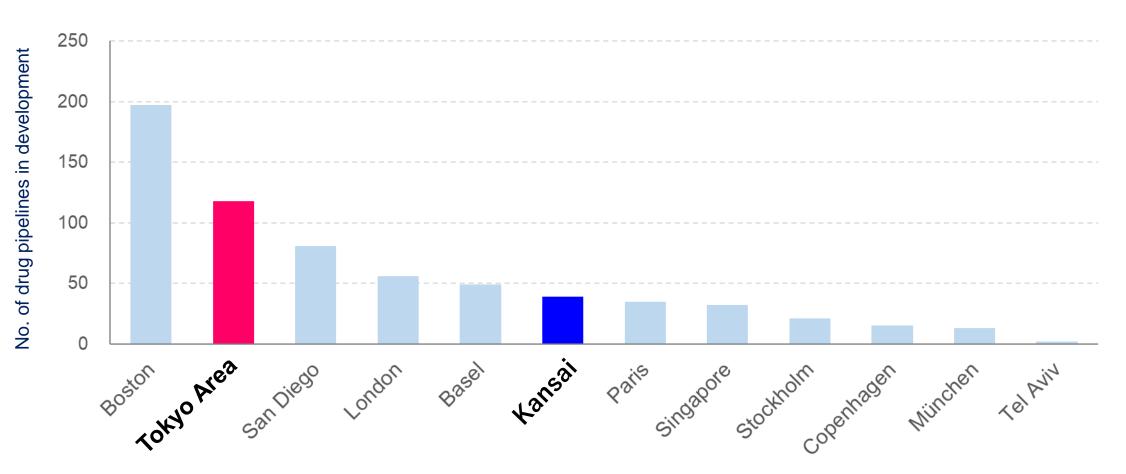
## **IPs & Publications**

Rank	Cluster	Country	Share of total PCT filings <sup>*1</sup> (%)	Share of total publications <sup>*2</sup> (%)	Total (%)
1	Tokyo-Yokohama	Japan	10.7	1.6	12.3
2	Shenzhen-Hong Kong-Guangzhou	China/Hong Kong	8.2	1.9	10.1
3	Beijing	China	2.8	3.7	6.5
4	Seoul	Korea	4.0	1.8	5.8
5	San Jose-San Francisco	US	3.7	0.8	4.6
6	Shanghai-Suzhou	China	2.0	2.1	4.1
7	Osaka-Kobe-Kyoto	Japan	3.0	0.7	3.7
8	Boston-Cambridge	US	1.4	1.0	2.4
9	New York City	US	1.1	1.0	2.2
10	Paris	France	1.2	0.9	2.1

\*1. Inventors listed in patent applications under WIPO's Patent Cooperation Treaty (PCT), spanning years 2016 to 2020

\*2. Authors listed in scientific publications in the Web of Science's Science Citation Index Expanded (SCIE) and covering the same period. From WIPO "Global Innovation Index 2022"

## **Drug Pipelines in Development in 2021**



Bio-related drug pipelines in the developmental stages from preclinical to Phase III were counted (as of the end of 2021).

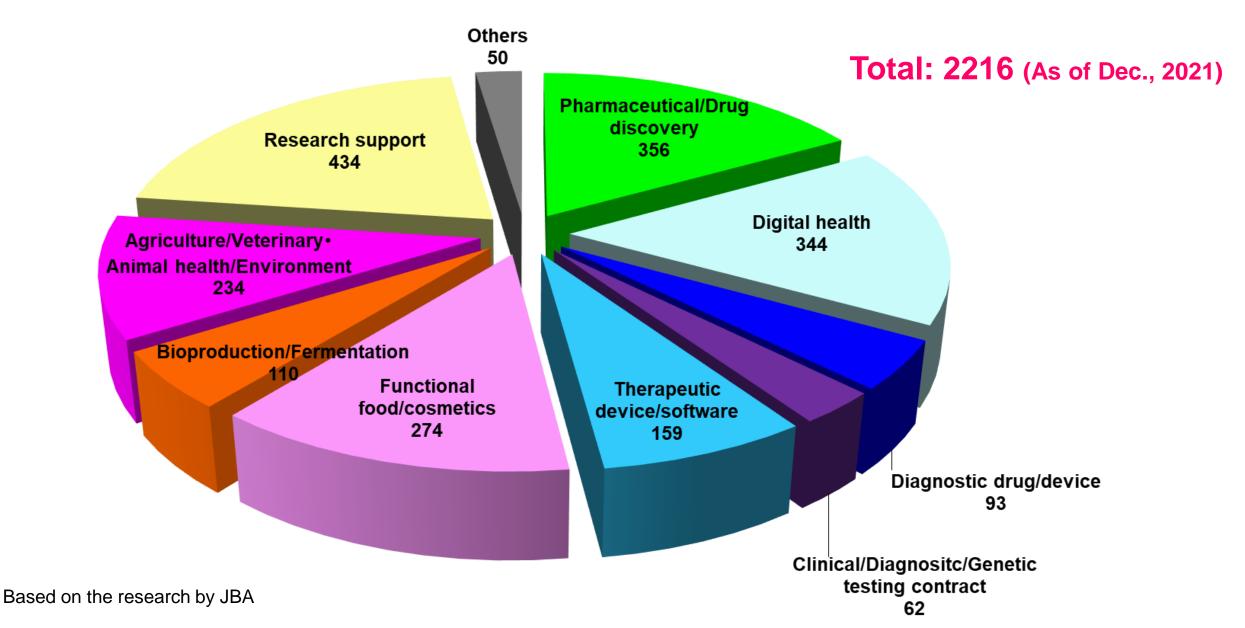
Data searched with BioMedTracker and "Asu-no-sinyaku" by Deloitte Tohmatsu

## Startup Ecosystem Ranking 2021 (Life Science)

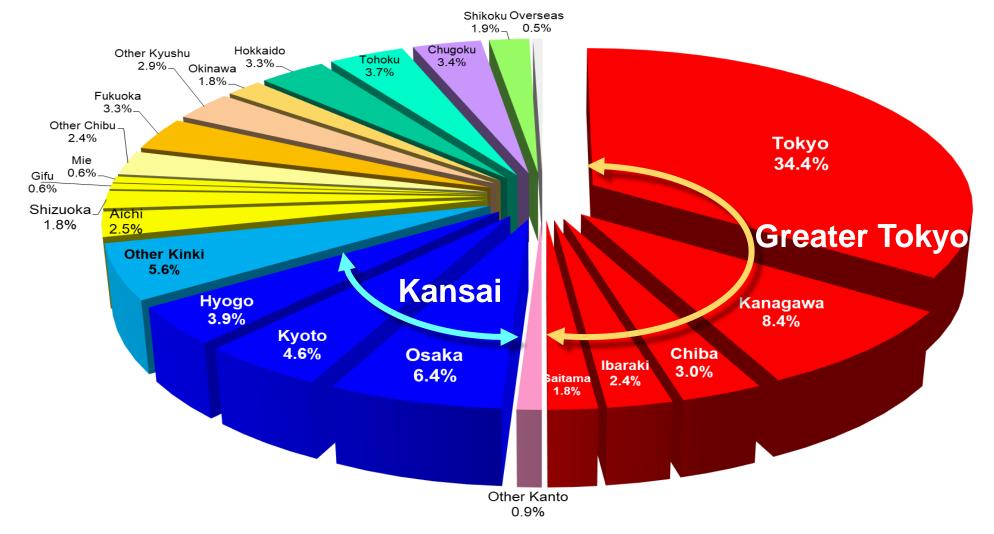
	Ranking	Performance	Funding	Knowledge	Talent	Infrastructure	Policy
Silicon Valley	#1	10	10	10	10	10	10
Boston	#2	10	10	8	9	10	10
New York City	#3	10	10	8	7	10	10
London	#4	9	10	7	10	10	6
San Diego	#5	10	9	8	4	9	10
Los Angeles	#6	7	7	8	8	8	10
Washington DC	#7	8	8	7	4	8	10
Philadelphia	#8	9	8	5	5	7	10
Shanghai	#9	9	9	10	5	4	4
Research Triangle	#10	8	6	4	9	5	10
Tokyo	#25	2	7	9	1	3	6

From: Startup Genome "The Global Startup Ecosystem Report 2021 Life Sciences Edition" (2021)

## **No. of Japanese Biotech Startups**



## **Location of Japanese Biotech Startups**



Biotech startups located in GTB and Kansai area occupy 50% and 14.9%, respectively.

From "Overview of Japanese Bio-related startups" (Kanto METI/JBA, 2020)



## Realizing "World's Most Advanced Bioeconomy" Society by 2030

## Expansion of market

Target: A total market size of \$840 billion in 2030 from current \$550 billion

## Formation of biocommunity

Building value chains in each market area by creating diverse and unique communities across Japan and by supporting their continued growth.

## Promotion of data linkage

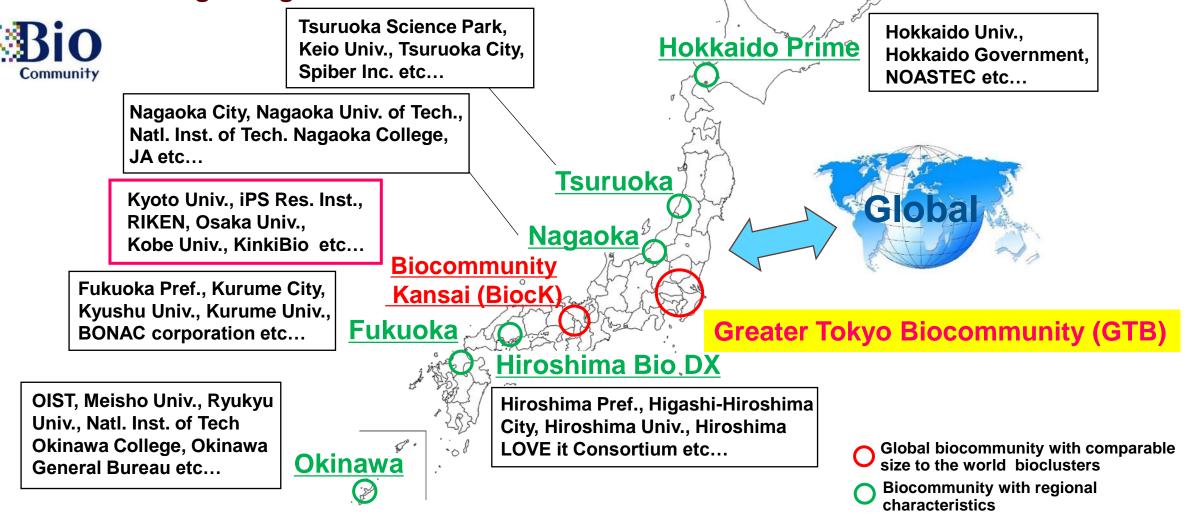
Creating an environment that allows for broad and flexible collaboration, including in different fields.

## **Japan's Leading Biocommunity**



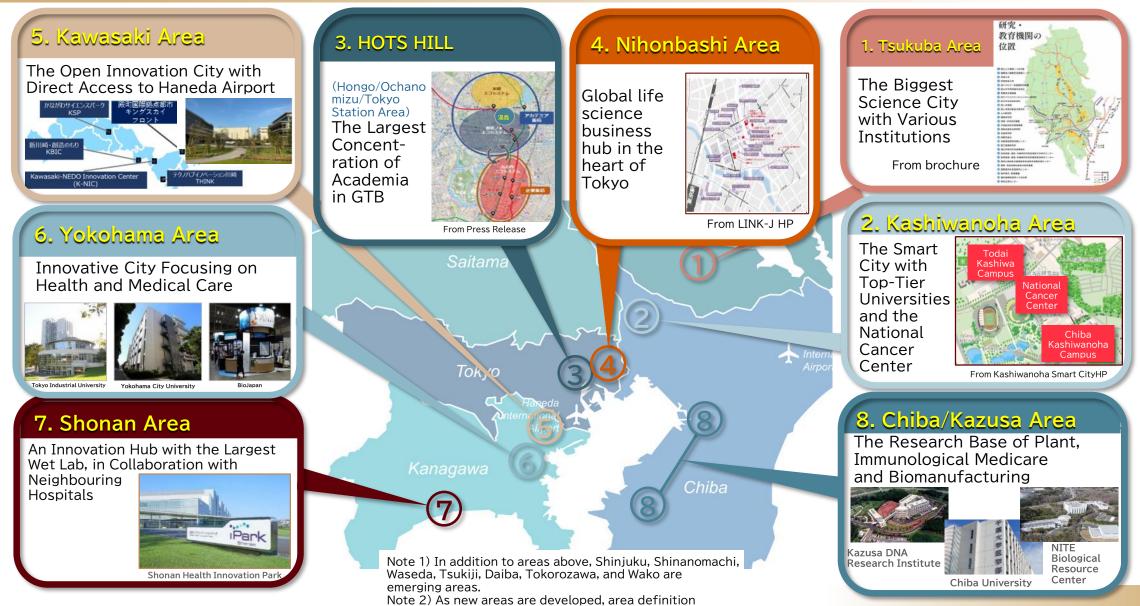
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Form an organic network with regional centers, with the international center at the core.
 Activate distinctive bio-industries throughout the country and promote the accumulation of excellent human resources and investment from Japan and abroad while also connecting with global clusters.



## **GTB Bio-innovation Promotion Areas**





maybe restructured.

## **Structure of GTB Council**



## **GTB** council

Chair: Mr. Osamu Nagayama (President, JBA) Vice-Chair:

Mr. Manabu Miyasaka (Vice-Governor of Tokyo

Metropolitan Government)

Dr. Toshiya Watanabe (Vice-President, Univ. of Tokyo)



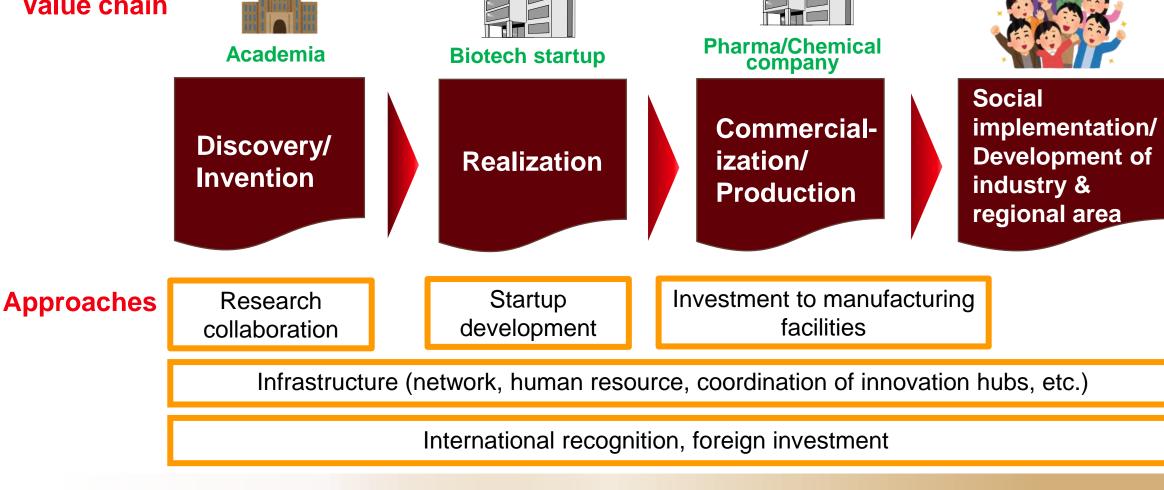
Mr. Nagayama Mr. Miyasaka Dr. Watanabe  Established in 2021 Three chairs are from business, academia and government.



## **GTB: Goal and Approaches**





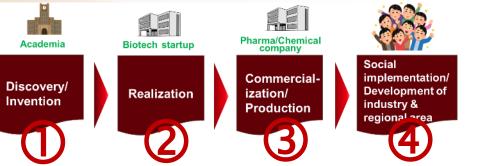


## **GTB** Areas



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① **R&D**:

**21 Government funded projects** Total max. **~1.5 Bil. USD** / 10 years (2021-2030)

Incubation facilities: Total floor a
 Startup Support: ~1.4 Bil.

Total floor area of  $\sim$ 555,000 m<sup>2</sup>

~1.4 Bil. USD by Government (Estimated)

**③ Bio manufacturing:** 

**12 Biologics manufacturing sites or headquarters** Subsidies of **~1.6 Bil. USD** 

Private investment: Total >3.4 Bil. USD / ~2 years (2021-2023)

USD is converted from JPY by average exchange rate (\$1 = ¥124) through 2021-2023.

GTB Areas	Greater Tokyo Biocommunity		
Facts & Figures       (As of August, 2023)         Image: Sector of the startup of the sta			
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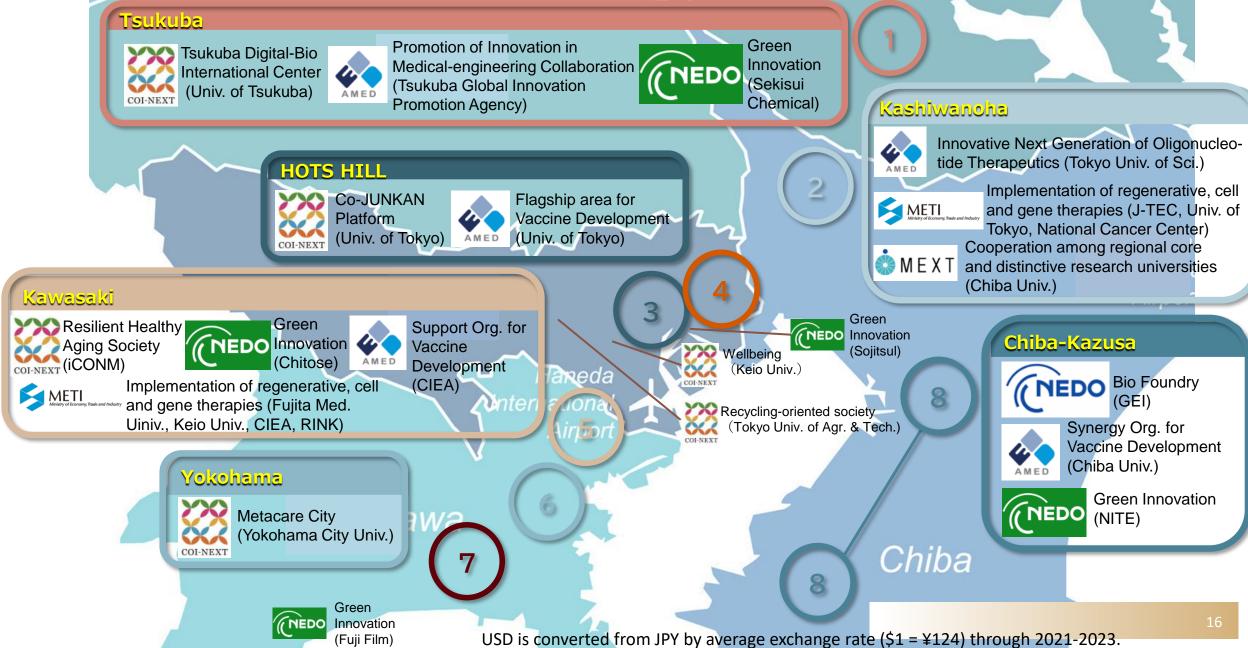
USD is converted from JPY by average exchange rate (\$1 = ¥124) through 2021-2023.

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## R&D: National Projects (As of Apr., 2023)

## **21 Government funded projects** Total max. **~1.5 Bil. USD** /10 yr (2021-2030)



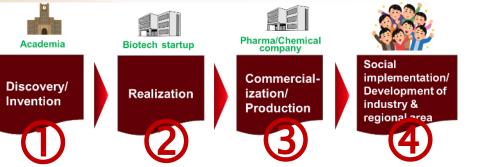






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## **Starutp Support: Certified VC for Drug Discovery Ecosystem (As of Apr., 2023)**



### **3. HOTS HILL**

DCIパートナーズ ✓ 東大IPC UTEC

DCI Partners Co., Ltd. UTokyo Innovation Platform Co., Ltd. The University of Tokyo Edge Capital Partners Co., Ltd.

#### 4. Nihonbashi

•		
•	ÓÓ	NEWTON BIOCAPITAL
•	<b>()</b> M	UFG

**Remiges Ventures, Inc. Newton Biocapital Partners** Mitsubishi UFJ Capital Co., Ltd.

Others

• CATALYS PACIFIC Catalys Pacific, LLC (Minato-ku)

Fast Track Initiative, Inc.

- D3 LLC (Shibuya-ku) 🔂 D3 LLC 8∞
  - **Eight Roads Capital Advisors Hong Kong** Limited (Minato-ku)
- saisei Saisei Ventures LLC (Shinagawa-ku)
  - JIC Venture Growth Investments (Minato-ku)
- JAFCO JAFCO Group Co., Ltd. (Minato-ku)

### Total support: **2.8 Bil. USD** (domestic)

50% of Startups are located within GTB area.

## Total support for GTB area by government: **1.4 Bil. USD** (domestic, estimated by JBA)

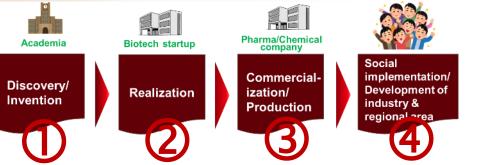


## GTB Areas



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① **R&D**:

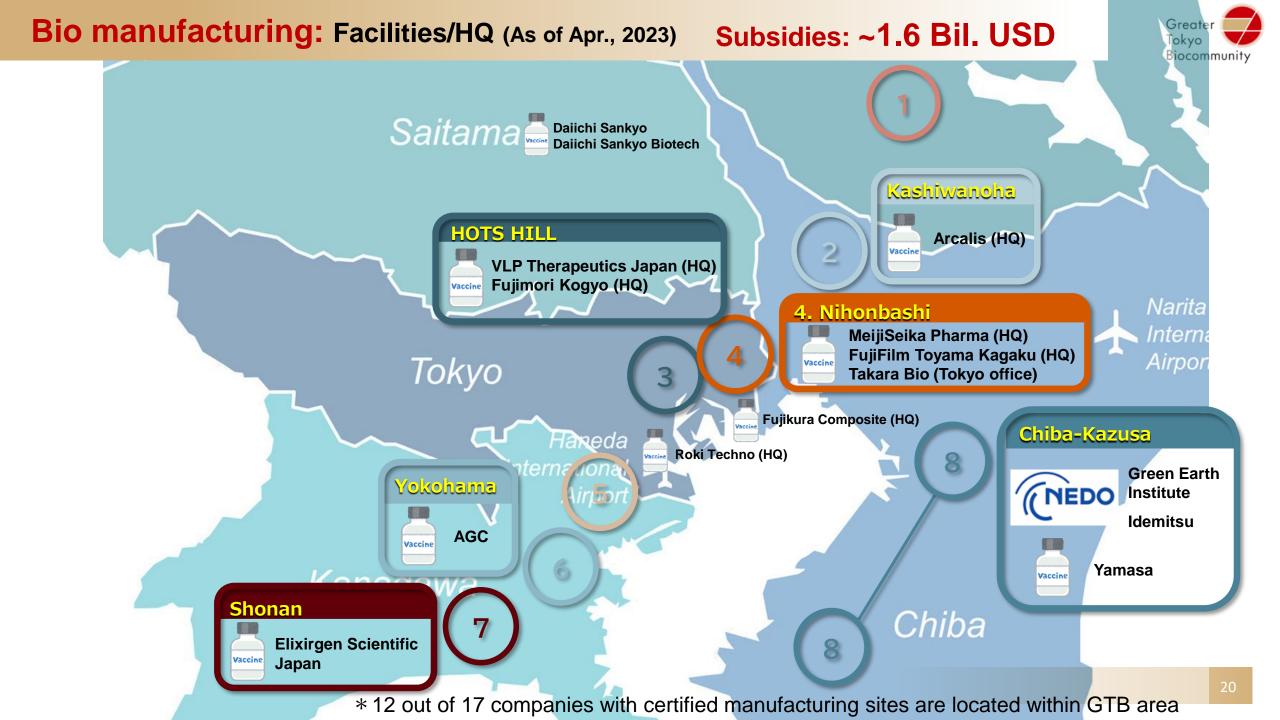
**21 Government funded projects** Total max. **~1.5 Bil. USD** / 10 years (2021-2030)

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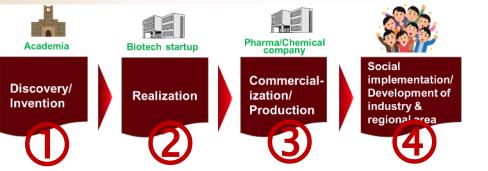


## **GTB** Areas



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## Facts & Figures (As of August, 2023)



① **R&D**:

**21 Government funded projects** Total max. **~1.5 Bil. USD** / 10 years (2021-2030)

Incubation facilities: Total for Startup Support: ~1.4

Total floor area of  $\sim$ 555,000 m<sup>2</sup>

~1.4 Bil. USD by Government (Estimated)

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12 Biologics manufacturing sites or headquarters Subsidies of ~1.6 Bil. USD

Private investment: Total >3.4 Bil. USD / ~2 years (2021-2023)

## Private Investment (Apr., 2021 to Jul., 2023) Total 3.4 Bil. USD /~2 years

Saitam

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Others

Japan Lyophilization Laboratory will establish a

manufacturing site for diagnostic medicines (-)

**Toso** will constract a research facility (58M)

>58 Mil. USD.



#### 5. Kawasaki Area

Peptidream will construct laboratories (157.0M). Shimadzu opened "Shimadzu Tokyo Innovation Plaza" (16.1M). Fujita Medical Univ. will open "Innovative Medical Research Center" (-).

>173 Mil. USD

### 6. Yokohama Area

Hoop Partners opened rental lab. (12.1M incl. 1.8M of R&D related).

AGC introduced biopharmaceutical manufacturing site (2~300M).

Chigai Pharmaceutical opened research center (1368M).

Univaleo opened research center (95.8M). Resonac opened research center (51.5M).

### >1528 Mil. USD.

#### 7. Shonan Area

Takaosago International acquired old Chugai's research center (-).

Raised funds: Chordia (71M), PRISM (43.2M), Fimecs (26.1M), Reborna Biosciences (13.2M), Orizuru Therapeutics (10.3M), GexVal (9.9M), GenAhead Bio (1.2M), SEEDSUPPLY (1.4M) Noile-Immune Biotech was listed (177M).

### >353 Mil. USD

#### 3. HOTS HILL

Univ. of Tokyo and Kubota agreed to collaboration (80.5M/10 yr.). Green Earth Institute was listed (93.4M). Cyfuse was listed (99M). Moderna acquired OriCiro Genomics (85M). 358 Mil. USD

#### 4. Nihonbashi Area

Mitsui Fudosan opened Mitsui Link Lab Shin-Kiba 2 & 3 (-). Eurofin acquired Repertoire Genesis (-). Medikit acquired Bolt Medical (-). Perseus Proteomics was listed (81.3M). Renascience was listed (81.3M). Susmed was listed (227.8M). CUORiPS was listed (79.7M). Others (205M) >916 Mil. USD

Chiba

#### 1. Tsukuba Area

**Eisai** renovated Tsukuba Research Center (68.4M). **Prologis** constructed logistic center with incubation facility (-)

Nisshin Foods acquired real estate for manufacturing facility (104.6M)

#### >173 Mil. USD

#### 2. Kashiwanoha Area

**Teijin** opened CDMO for regenerative medicine (-). **Astellas** opened open innovation site for cancer microenvironment (-).

H.U. Group opened a research center (-). Mitsui Fudosan constructed rental labs/offices (-). Mitsui Fudosan constructed hotel cooperative for National Cancer Center East Hospital (-).

#### >120 Mil. USD

#### 8. Chiba/Kazusa Area

Startup companies originated from Chiba Uinv. raised funds (total of 24M).

Green Earth Institute opened "Satellite Research Labs" and "Biofoundry Research Labs" (-). Idemitsu will construct SAF manufacturing site (367M).

### >392 Mil. USD

Converted by average exchange rate through 2021-2023: \$1 =¥124

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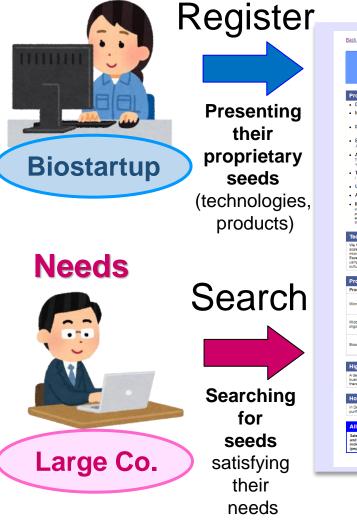
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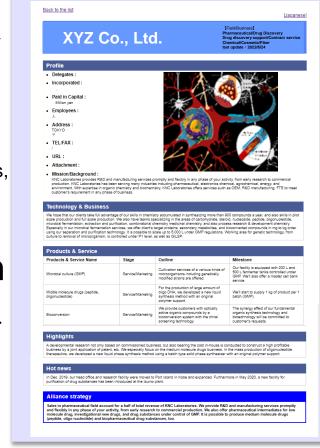
NPO Kinki Bio-Industry Development Organization <sup>特定非営利活動法人</sup> 近畿バイオインダストリー振興会議

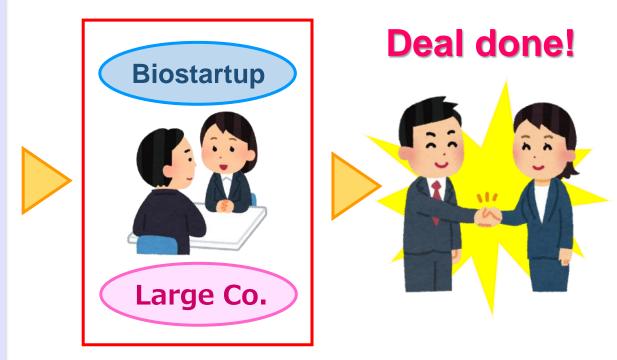
## **Bioventure Database**



Providing the information on Japanese domestic biotech startups and their business activities

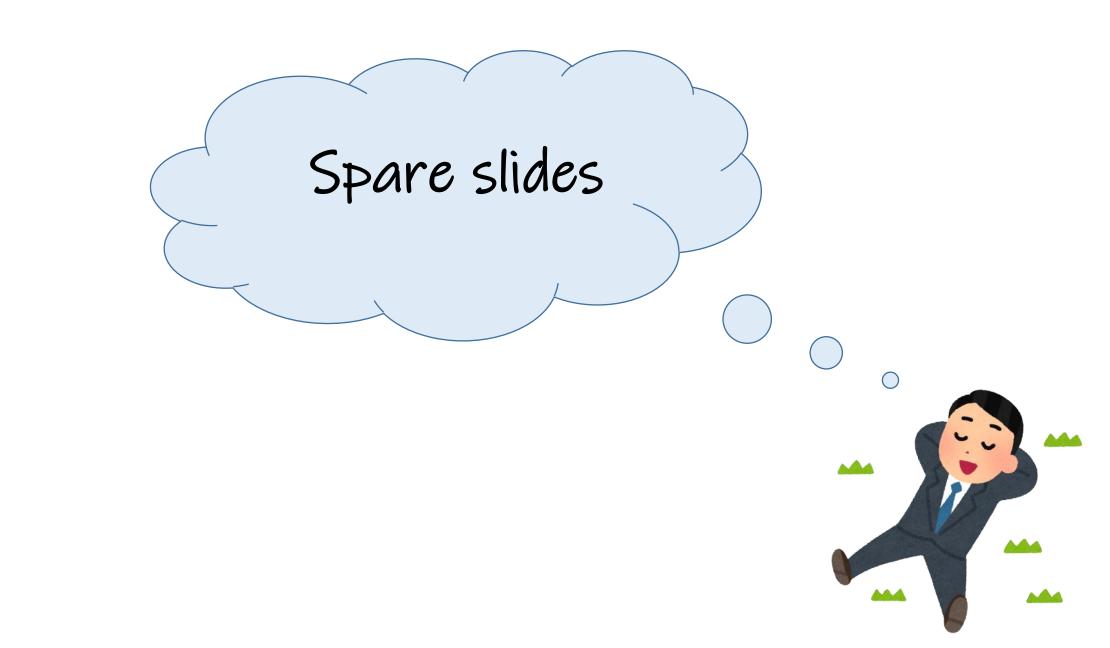




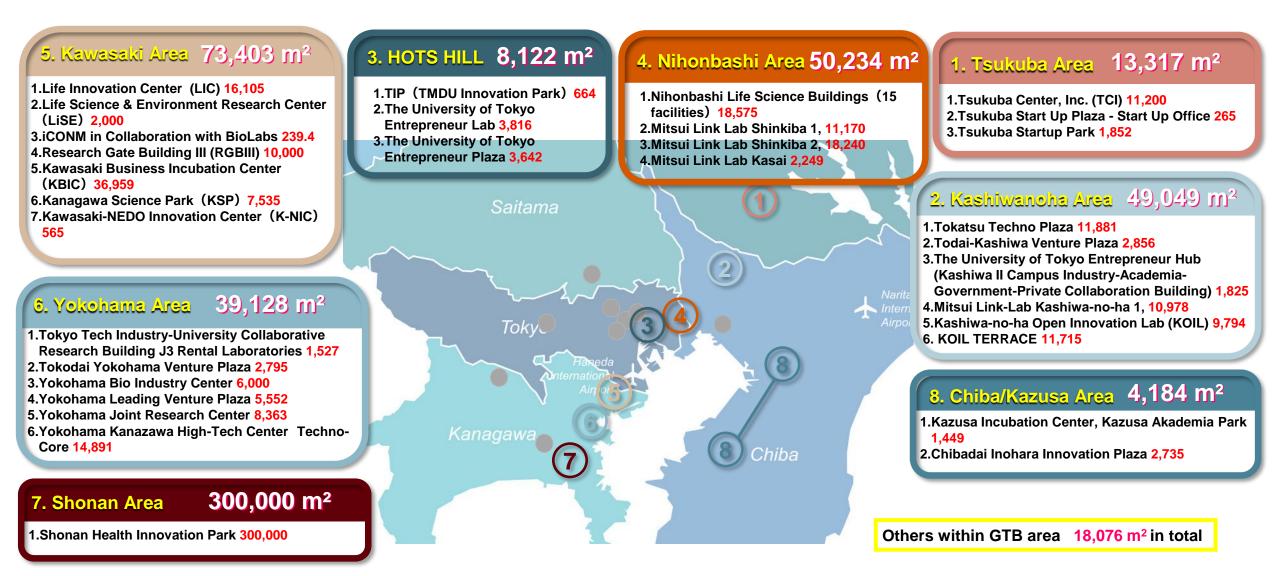


## Currently, information on >150 startups is open to the public in English.

Link : https://area34.smp.ne.jp/area/table/5697/FDN\_H3/M?S=lbsfn2mbnak Database is managed in collaboration with NPO Kinki Bio-Industry Organization.







### **Incubation: Acceleration activities** (As of June, 2023)



#### 5. Kawasaki Area

K-NIC: Consultation, business matching iCOMN: Collaboration with BioLabos King Skyfront: Tonomachi connect RINK: Tonomachi-based regenerative therapy network KSP: Support for entrepreneurship and growth

#### **3. HOTS HILL**

TIP: Innovation Idea Contest Univ. of Tokyo: FoundX Univ. of Tokyo IPC: 1stRound Beyond Next Ventures: BRAVE PLUG and PLAY JAPAN: Plug and Play Program

#### 4. Nihonbashi Area

INDEE Japan: X-DOJO Beyond Next Ventures: BRAVE DCI Partners: Venture creation investment National Cancer Center: Accreditation system for certified ventures LINK-J: Out of Box Consultation

#### 1. Tsukuba Area

Univ. of Tsukuba: Research Studio TGI: Support for medical device business TLSK: Pitch events, Young people's networking Tsukuba City: Startup ecosystem consortium TCI: Support for drug discovery and financing arrangements, innovation matching

#### 2. Kashiwanoha Area

Asian entrepreneurship award (AEA) National Cancer Center/UTEC/Beyond Next Ventures: NCC Incubation Program Mitsui Fudosan/Kashiwa City: KOIL startup Program Kashiwa City/TX Entrepreneur Partners: Startup Concierge Business

#### 8. Chiba/Kazusa Area

Chiba Pref.: Acceleration program of innovative venture enterprise growth, Chiba entrepreneur support business Chiba Univ.: JETRO's desk for industry-academy collaboration NITE: DBRP, Consultation for Cartagene Law

#### 6. Yokohama Area

LIP Yokohama: Support for overseas expansion and development of human resources YOXO: Startup support by Yokohama City Tokyo Inst. of Tech.: START (Support for startup ecosystem creation), entrepreneurship education organization Tokyo Inst. of Tech./Beyond Next Ventures: BRAVE

#### 7. Shonan Area

iPark: SAMURAI (Consultation), Venture Mentoring Service, Incubation Program Chiba