The University of Tokyo
Intellectual Property Report 2023
--- Digest Version (English) ---

Division of University Corporate Relations (DUCR)
The University of Tokyo

Picture on the front cover of the original version (Japanese) :
"The University of Tokyo Entrepreneur Plaza"
The Entrepreneur Plaza, inaugurated at the Hongo Campus in 2007, has 29 rooms, each measuring approximately 58m² in size. Twenty rooms located on the 4th - 7th floors can be used as a wet laboratory capable of conducting P2 level biotechnology experiments.

Role of Intellectual Property Rights in UTokyo

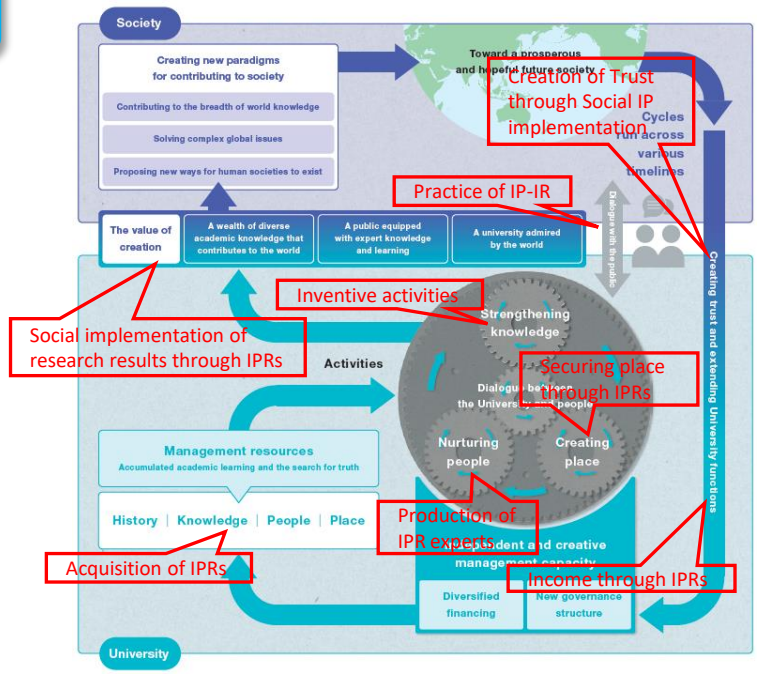
- ✓ Acquisition of intellectual property rights (IPRs) realizes an environment where private companies can conveniently invest in social implementation of research results.
- ✓ IPRs are crucial for fulfilling the university's mission of social implementation of research results.

IPR management in UTokyo

- ✓ The UTokyo assumes responsibility for the management and utilization of research results obtained using the UTokyo and public resources.
- ✓ Taking the opportunity for the incorporation of national universities and so on, the UTokyo established the current IPR management system that enables it to inherit IPRs originating from research activities.
- ✓ The UTokyo manages and utilizes IPRs in cooperation with TODAI TLO, Ltd.

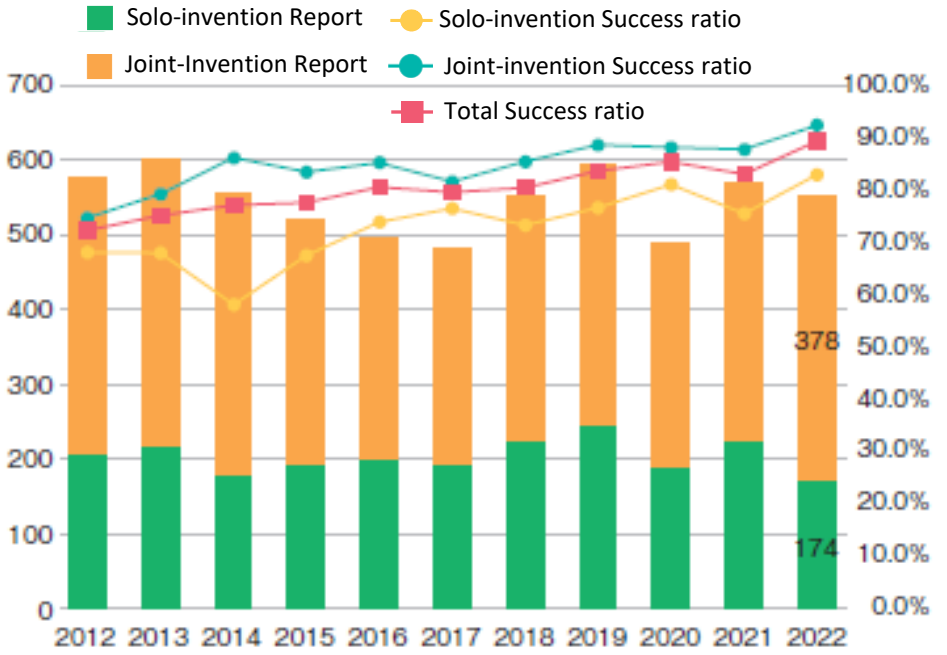
【Topic】Relation between UTokyo Compass and IPRs

The UTokyo Compass is a statement of the guiding principles of the university. It was formulated in 2021 with 20 goals set from the three perspectives of People, Place, and Knowledge.
IPRs, positioned as key management resources for these goals, are related to various initiatives under each perspective.
The diagram on the right illustrates the expected roles and functions of IP in relation to The University of Tokyo Future Society Creation Model. IPR activities form a part of this cycle of developing autonomous management capabilities based on the development of financial resources.
The UTokyo will endeavor to create an ecosystem that supports sustainable research activities based on IPRs.



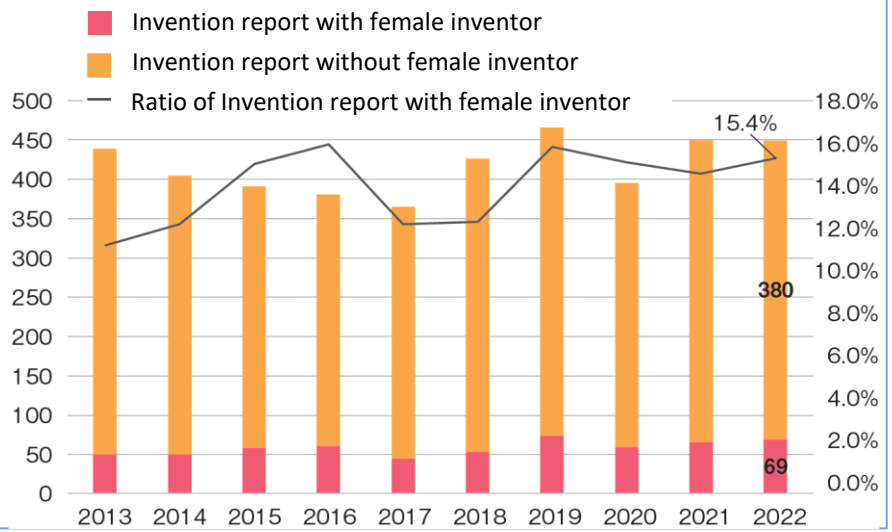
Invention Reports

- ✓ The UTokyo inherits the right to obtain patents based on the research activities conducted by faculty member.
- ✓ Approximately 500-600 invention reports submitted per year by members during the last 10 years.
- ✓ 30-40% of the reports pertain to independent (UTokyo solely-owned) inventions and 60-70% are joint inventions, mainly with private companies.
- ✓ The succession ratio of inventions has been gradually increasing (89.3% for 2022).
- ✓ The graduate school of engineering accounted for the largest proportion (approximately 30%) of reports submitted during the last 10 years.



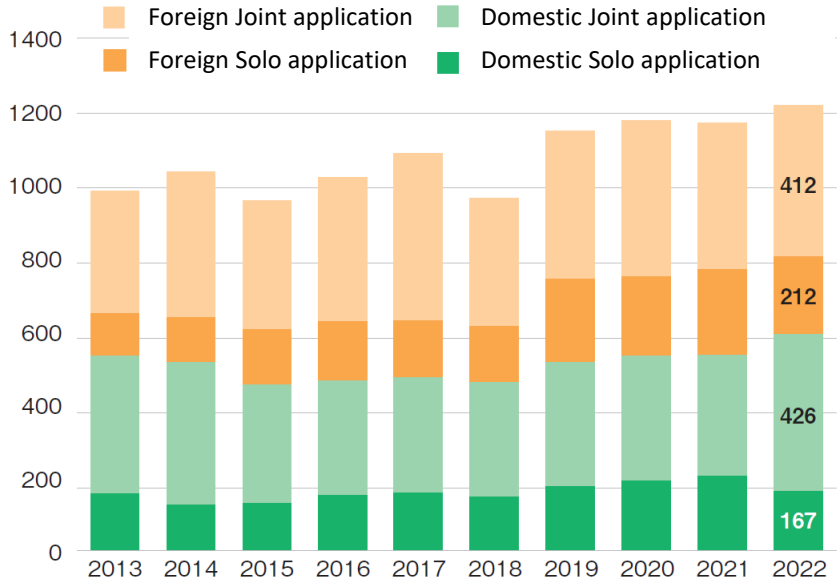
【Topic】Statistics of invention reports with female inventors

The UTokyo adopted “the University of Tokyo Statement on Diversity & Inclusion (D&I)” in 2022. The university has been working for the active participation of female faculty and the number of female professors and associates has increased by more than 100 in the last 10 years. However, the percentage of invention reports involving female inventors remains low, at approximately 15%. In 2022, the university launched the project titled, “UTokyo Gender Equity Initiative #WeChange,” an initiative to develop female leaders by providing active support for female researchers. The UTokyo will continue to work for the active participation of female researchers in the IPR system.



Patent Applications

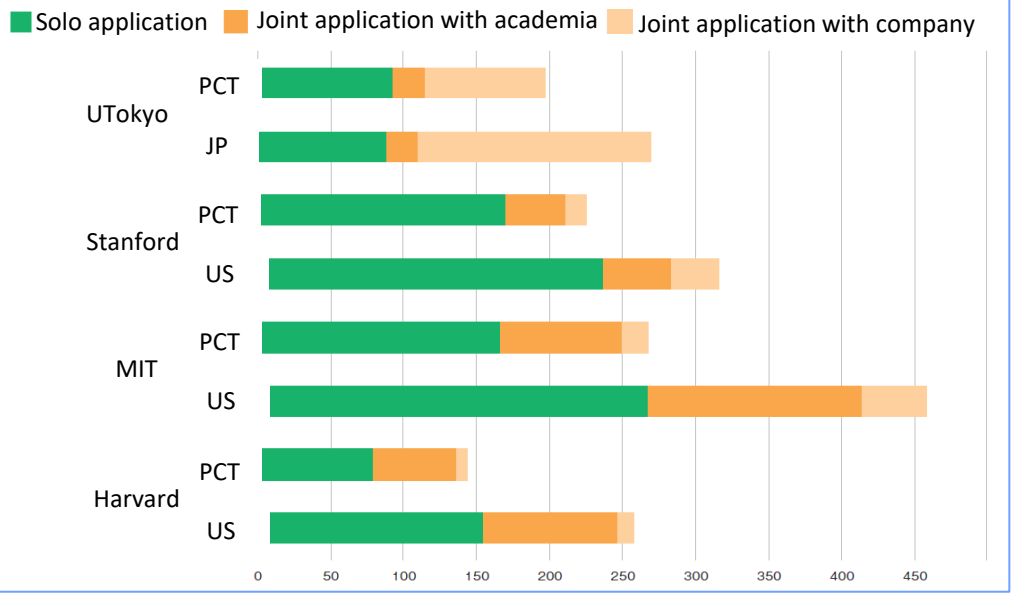
- ✓ Domestic applications (applications to Japan) are on a slight increase. Especially, joint applications in FY2022 increased by approximately 100 compared to the previous year.
- ✓ In FY 2022, domestic and foreign applications were approximately 600 each.
- ✓ Regarding technological fields of patent applications, life sciences accounted for the largest share of individual applications (35%). Regarding joint applications, manufacturing technology had the largest share (34%), followed by life sciences (24%).



【Topic】JP-US comparison regarding joint applications with companies

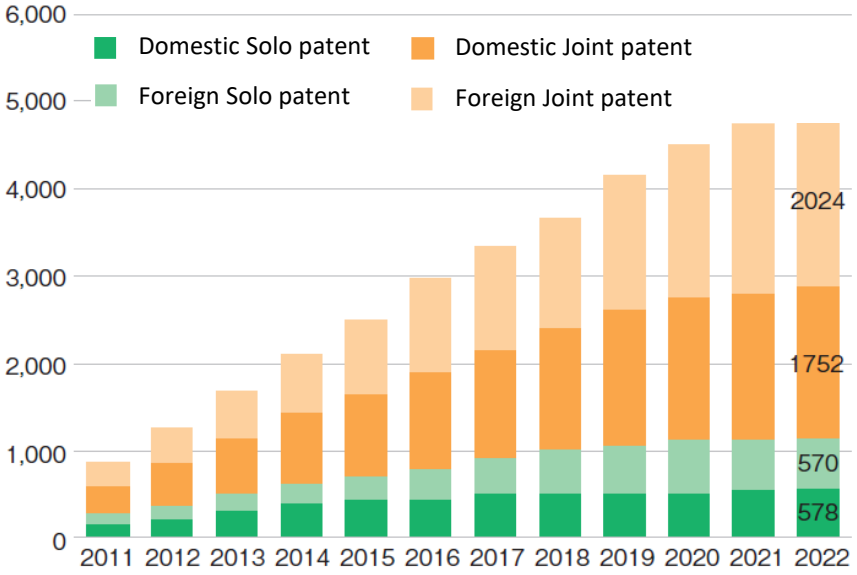
The comparison of patent publications of the UTokyo and major US universities shows that the proportion of joint applications with private companies in the US is significantly lower. There possible reasons include:

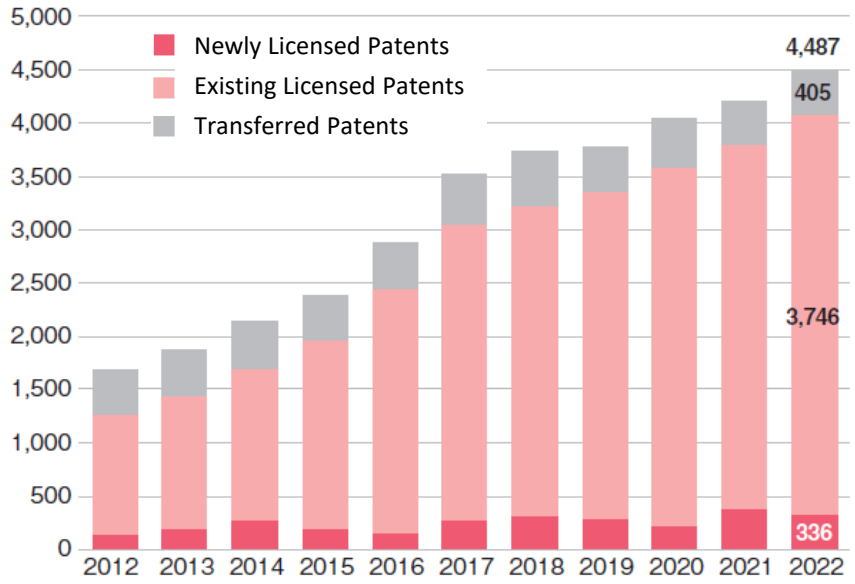
- Sponsored research is quite common in the US with funding from private companies compared to the joint research approach.
- Many universities do not accept joint research offers that do not meet the requirements of Fundamental Research under the US export control regulations.



Registered Patent

- ✓ Total number of patents held last year reached 4,924.
- ✓ Joint patents have steadily increased over recent years.
- ✓ Individual patents are regularly assessed and some of them are abandoned owing to maintenance costs. Only less than 3% of the registered patents are kept without licensing for more than 11 years.
- ✓ Regarding joint patents with private companies, the co-owner bears the costs of the patent. Based on their concerns or requests, a certain number of patents is maintained for an extended duration even without license or exercise of patent.



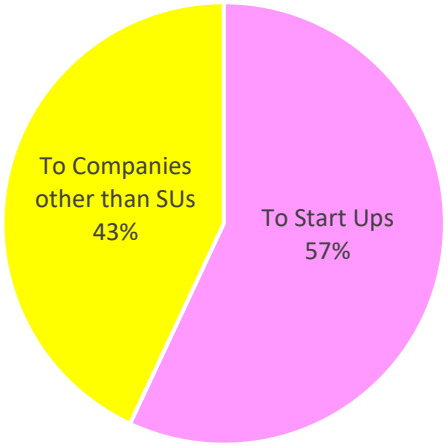


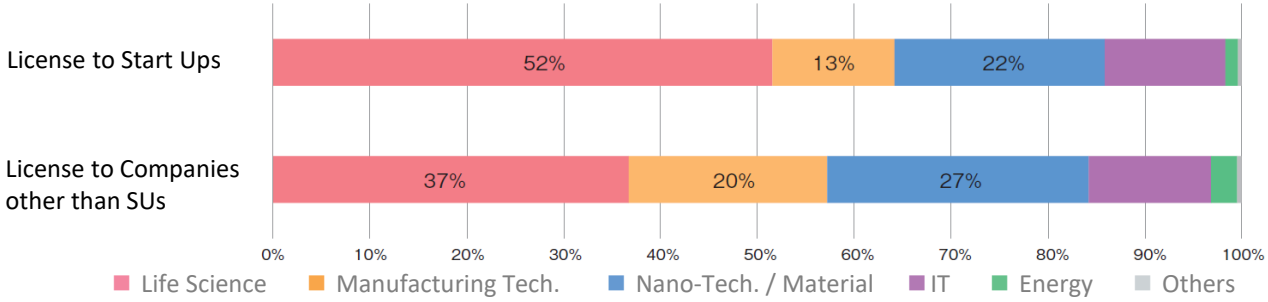
License of Patents

- ✓ The number of licensed patents is steadily increasing year by year, reaching 4,487 with 382 newly licensed patents in FY2022.
- ✓ 32% of the rights to be licensed are single patents and 68% are shared patents. 20% of shared patents are licensed to third parties.
- ✓ TODAI TLO provides consistent support from an invention consultation stage before invention reports to a licensing stage. This practice realizes many patent licenses.

License of independently owned patents

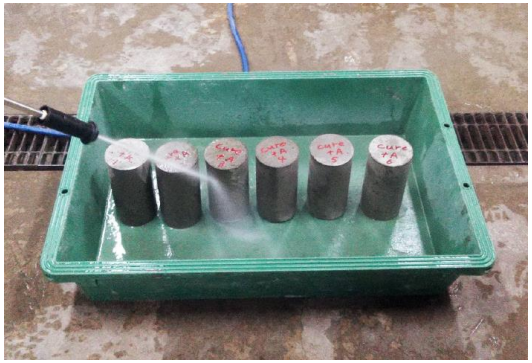
- ✓ 57% of individual patent licensees are startups and 43% are existing companies.
- ✓ Regarding the technical fields of patents licensed to startups, 52% of all licenses are from the life sciences field. As for the technical fields of patent to existing companies, life sciences accounted for 37%, with a higher proportion of nanotechnology/materials and manufacturing technology than for startups.





【Case】KOIZUMISEIMA

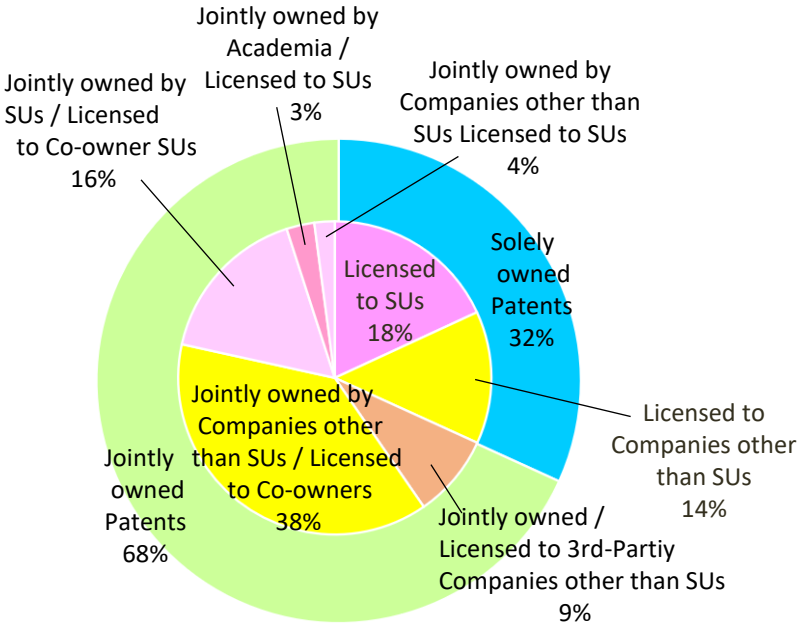
Many of Japan's concrete structures are reaching the stage of renewal. It is warned that substantial waste concrete will be generated, exceeding 40 million tons per year. This constitutes one of the major social issues in Japan.

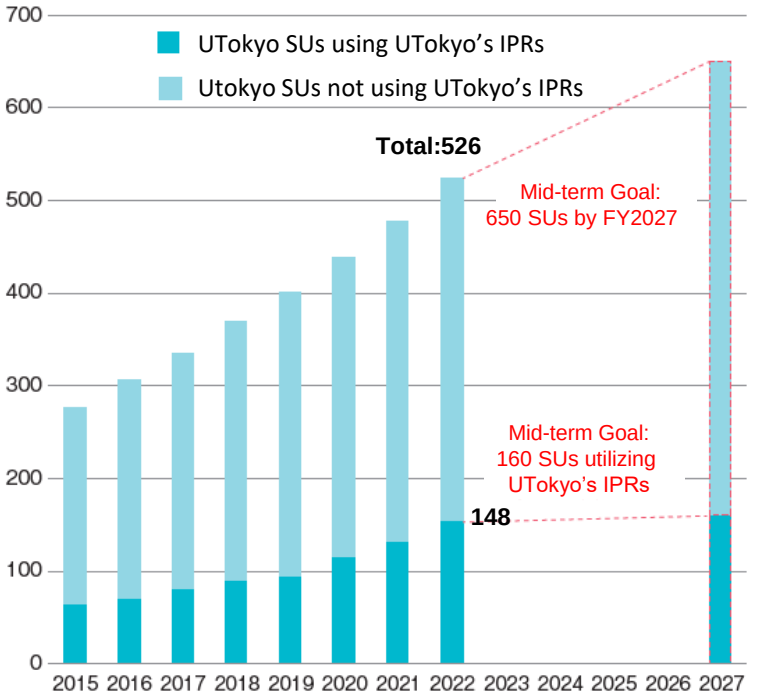


Research results of Professor Takafumi Noguchi have provided one solution for this issue. Spraying carbonated bubble water onto hardened cement revealed that the cement hardened because CO2 reacted with the calcium hydroxide in cement. Koizumi Seima Co., Ltd. became interested in the research results, and in 2021, concluded an exclusive license agreement for the patent held by the UTokyo. Koizumi Seima is planning to launch a device that sprays carbonated bubble water on cement.

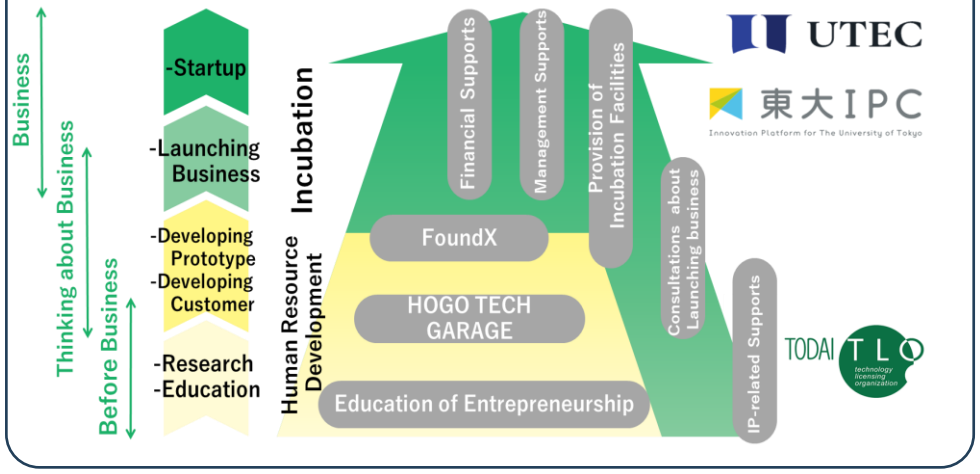
Startups utilizing UTokyo IPRs

- ✓ Approximately 40% of patents licensing at the UTokyo is for startups.
- ✓ TODAI TLO, UTEC, UTokyo IPC, and DUCR of UTokyo are collaborating to provide seamless support to startups.
- ✓ UTokyo's mid-term objectives aim to create 650 UTokyo-related startups and have 160 of these utilize UTokyo's IPRs by 2027.
- ✓ The number of startups utilizing UTokyo's IPRs reached 148 by the end of FY2022.
- ✓ Total market capitalization at the time of listing was tens of billions yen, and that of one company exceeded 100 billion yen. Utilization of UTokyo's IPRs by startups has been creating significant economic impact.





Schematic Diagram of UTokyo's Support for Startups



Cases: Startups utilizing IPRs of UTokyo

THINKCYTE

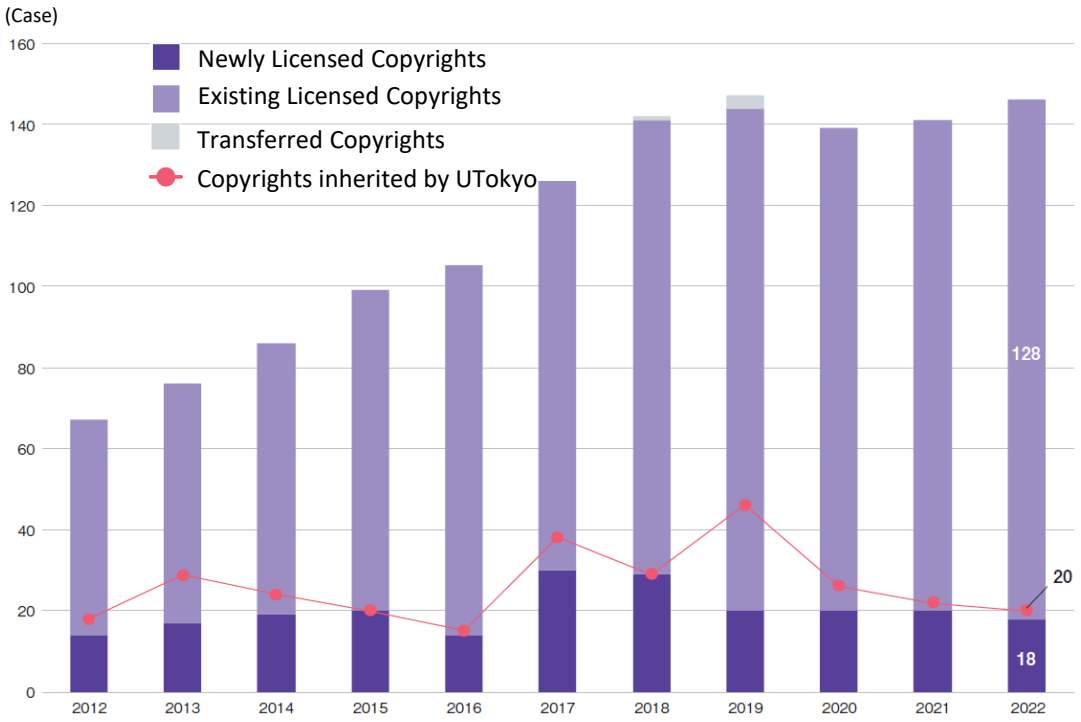
ThinkCyte K.K. was established in 2016 to socially implement a new technology called Ghost Cytometry using the research results of Associate Professor Sadao Ota. Using Ghost Cytometry, ThinkCyte performs label-free characterization and isolation of cells at high throughput employing machine-predicted “in-silico” labels.
This technology is highly compatible with automated manufacturing processes. As label-free cell characterization eliminates a sampling step, it facilitates inline measurements and enrichment in the cell manufacturing process.
ThinkCyte has adopted an aggressive patent strategy to ensure its technological superiority in major countries including Japan. It has a patent portfolio of over 30 patent application families in the world. Its first commercial machine launched in 2023 has been rolled out overseas with strong patent protection.

Gaianixx

Gaianixx Co., Ltd. will contribute to dramatic innovations in the semiconductor industry by socially implementing new crystal growth developed by Dr. Takeshi Kijima of the Tabata Laboratory, Graduate School of Engineering. The negative effect of strain on semiconductor substrates has been a major obstacle in the advancement of semiconductors. Dr. Kijima invented a solution to the obstacle using the special crystal growth technology. Gaianixx was founded with hands-on support of the UTEC as well as other support programs of the UTokyo. Gaianixx has been actively filing patent applications to build robust barriers to protect their technology as well as their business.
Gaianixx proactively secures trademarks. In addition to the company name, it secures product names, etc. for concrete brand protection worldwide at early stage.

Succession and Utilization of Copyrights

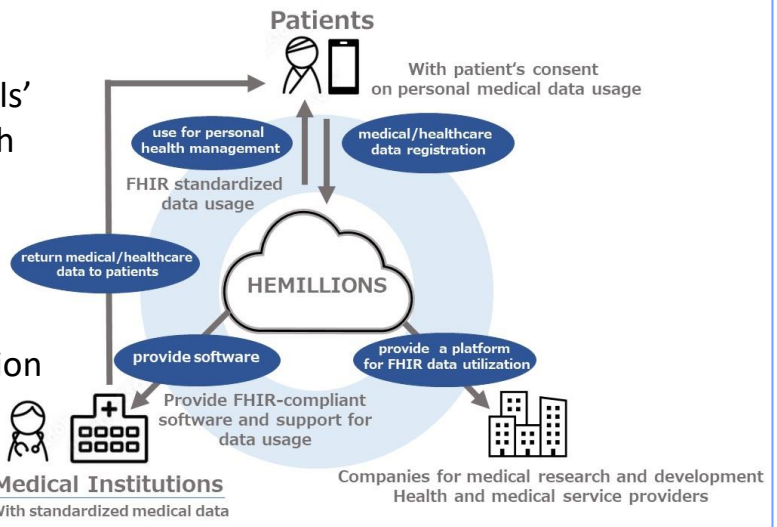
- ✓ Under UTokyo's IP regulations, reports to bureau have to be submitted only when it becomes necessary to license them for profit in the case of software and database works.
- ✓ In FY2022, 20 works, such as software works, were reported and those copyrights were inherited by the UTokyo.
- ✓ In FY2022, newly licensed copyrights include 18 cases. The number of copyright license contracts was 146 at the end of FY2022.



【Case】 HEMILLIONS

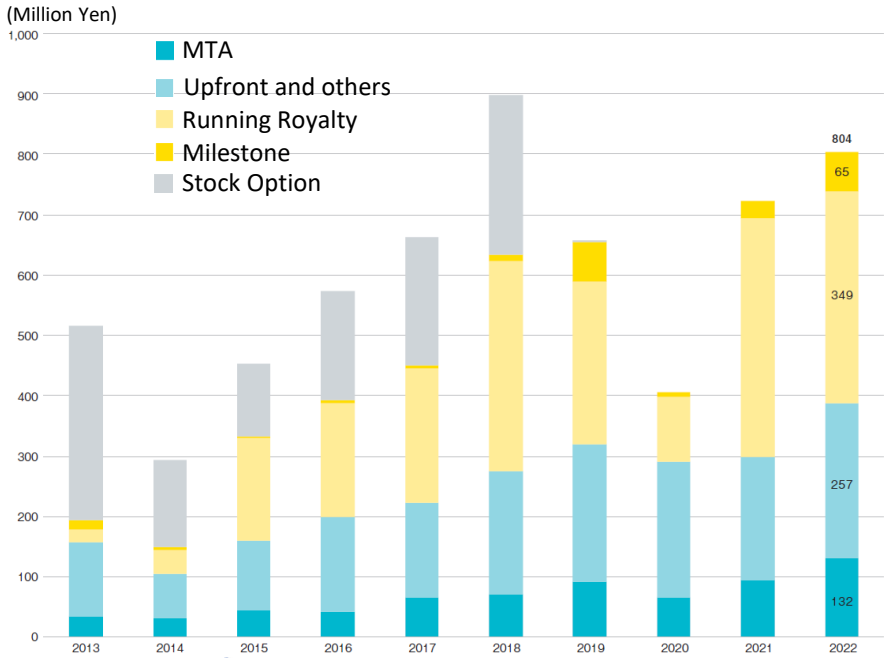
HEMILLIONS Corp. was found under the partnership between UTokyo and SoftBank Corp. The aim of HEMILLIONS is to standardize individuals' medical records among hospitals and, ultimately, make personal health records (PHR) available for patients. Together with Prof. Kazuhiko Ohe and his team, HEMILLIONS has developed a software service called "FRUCtoS." FRUCtoS uses the HL7 FHIR server to expand the network between hospitals, ensuring the secure transmission of patient data.

HEMILLIONS began as an initiative of the Beyond AI Research Promotion Organization, an industry-academia collaboration project between UTokyo and Softbank. This marks the first instance where UTokyo has directly held stocks in exchange for its copyright and know-how.



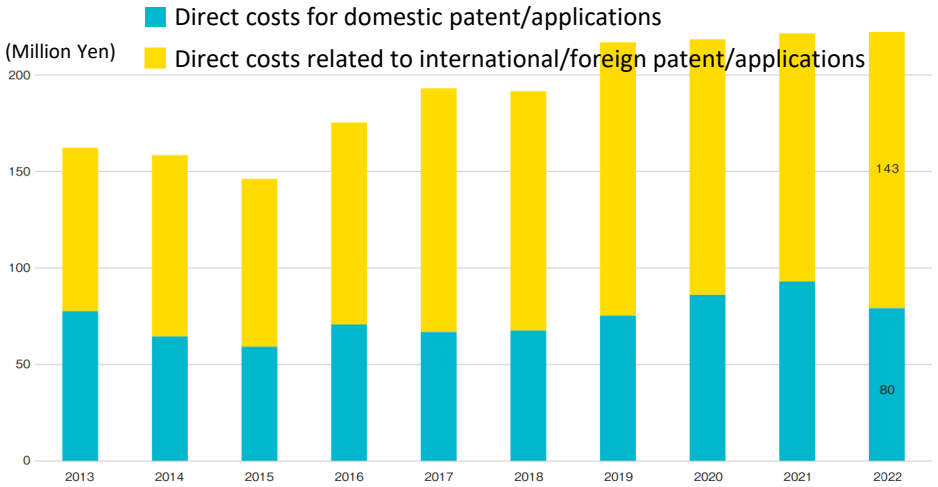
Direct Income through IPRs

- ✓ Direct income from owning IPRs of FY2022 is 804 million yen.
- ✓ Recent income has exceeded that in the early 2010s, despite annual fluctuations in the amount due to heteronomous factors.
- ✓ The total income from “Upfront and others” and “MTA” has remained stable during recent years despite the COVID-19 pandemic.



Direct Cost of Acquisition/Maintenance of IPRs

- ✓ Patent acquisition involves agent fee for patent attorney, application fee to the Japan Patent Office, etc. Patent maintenance involves an annual fee.
- ✓ The UTokyo bears the cost for solo-applications as well as joint applications with academia. Recently, total costs have remained over 200 million yen.



- ✓ In the case of patent acquisition and maintenance for a joint invention with a private company, the cost is generally borne by the private company.
- ✓ Obtaining a patent in a foreign country costs more than obtaining one in Japan because of additional translation and agent fees.
- ✓ Securing resources or budget to maintain a global patent portfolio is a significant challenge despite increasing foreign patents.

For inquiries, please contact: info@ducr.u-tokyo.ac.jp