

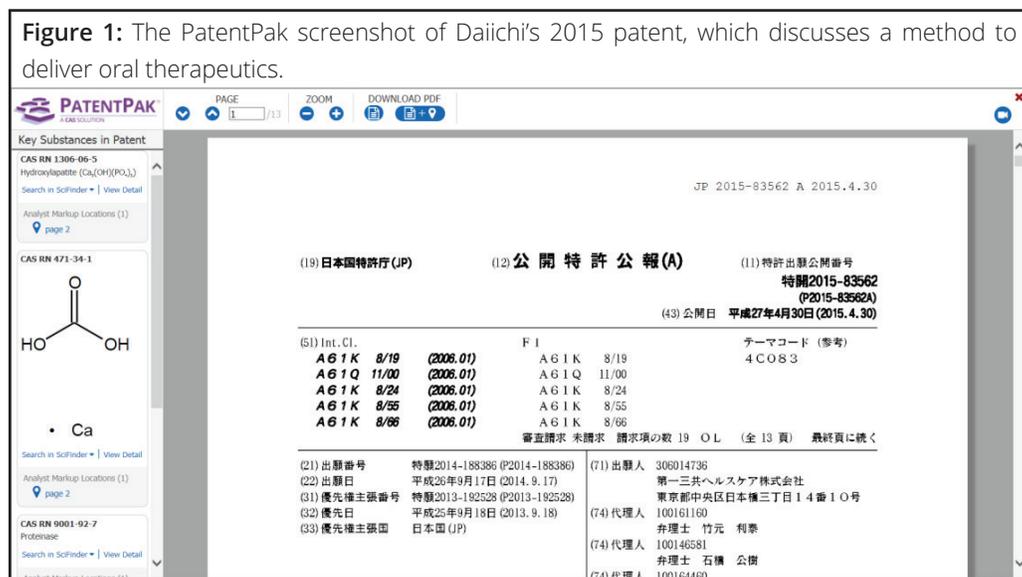


**JAPAN: STARTUPS LEAD THE WAY TO A MORE  
DYNAMIC, INNOVATIVE BUSINESS ENVIRONMENT**  
A CAS WHITEPAPER



Policy revisions over the past ten years have substantially changed the Japanese business culture with small, incremental growth giving way to a more energetic startup environment. Risk and potential failures are now tolerated more than ever before, and both direct and indirect government funding reached a ten-year high in 2013. After the U.S. and China,

(JP2015083562) which describes a drug delivery formulation made of porous materials such as silica, hydroxyapatite or particles of calcium carbonate that could deliver anti-inflammatory therapies, plaque dissolving enzymes and/or disinfectants (available in full text, as shown in PatentPak™, Figure 1).

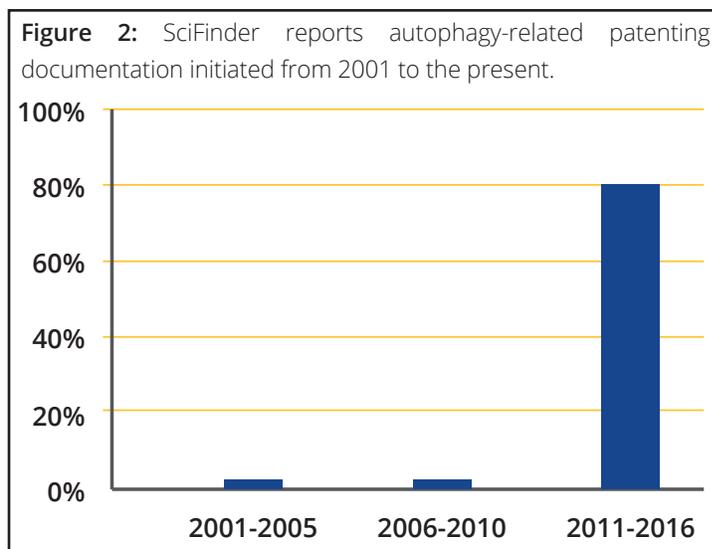


Another example of the diversity of CAS data is autophagy, for which Yoshinori Ohsumi, professor at Tokyo Institute of Technology, was recently awarded a Nobel Prize. Since 1990, 54,237 conference publications, dissertations and journal publications involving autophagy have been

Japan invests the most in R&D, approximately 17.5 trillion yen in 2014. With one of the highest ratios of researchers to workers in the labor force, Japan is poised to capitalize on this positive move towards a more agile, innovative business environment.

covered by SciFinder. SciFinder with PatentPak reports over 860 autophagy-related patent documents since 1990, over 80% of which were granted in the past fifteen years.

This emphasis on innovation is exemplified by SciFinder® user Daiichi Sankyo. CAS's curated chemical information is used by patent offices, Fortune 500 companies, government research organizations and universities worldwide, and our databases cover topics beyond the traditional chemistry space including biology, materials, pharmacology, toxicology, astrochemistry, forensics, nuclear, geochemistry, ecology and more. An illustration of this is a 2015 Daiichi patent





In STN<sup>®</sup>, CAS data report the major therapeutic fields for autophagy-related activity in the patent literature. From 2011-2015, oncology, neurodegeneration and cardiovascular applications dominated this arena. STN also reveals that the U.S., China, South Korea and Japan have led the world in autophagy patenting over that same time period.

Japan is not without its challenges towards a more dynamic, pro-growth environment, including ongoing demographic stagnation and limited labor mobility. The country, however, has already proven its resilience. With a more accepting view of economic uncertainty and continued investment in human resources, Japan is primed for an upward trajectory, yielding additional opportunities for innovation and progress.

**Figure 3:** STN reports the major clinical applications of autophagy-related patenting from 2011-2015 (Source: HCAplus on STN, October 2016).

