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## **From Idea to Product; Companies and Research Institutes, Various Strategies**

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Research institutes, risk-taking companies, and commerce companies are among the most important players in the commercialization of medical nanotechnology products, and they have individual scenario and plan to convert nanotechnology ideas to products. Research institutes have the largest share in the production of idea and presentation of primary laboratory findings, while risk-taking companies are the financial providers in the path of commercialization. The final station in commercialization can be a commerce company who owns the required tools for the production of the final product.

Commercialization of medical and drug products is much more complicated than other products in the field of nanotechnology. The reason is the challenge in the performance and safety of these products. Data from clinical and non-clinical tests is required to verify a product. Therefore, it must be expressed that the commercialization of medical products in nanotechnology is far different from the development of these products in other technologies.

The main path in the commercialization of nanotechnology products in medicine is that after filing patents, findings obtained in governmental or private sector (university, industry, governmental institutes) are given to companies in the private or governmental companies for the development and commercialization. Sometimes, this process leads to the establishment of a new company. After the development of technology that results in the conversion of patented laboratory findings to new services or products, the marketing process begins where the markets are hospitals, private clinics, diagnosis centers, and pharmaceutical companies.

However, the commercialization path is different for research institutes, risk-taking investment companies, and commerce companies. The primary idea of the product is usually obtained through three methods in medical research institutes: researcher's idea, technical consultant's suggestion, and extracting the need of the market. Research is carried out on

ideas by using money from the commercialization of the previous products, and the prototype is created. The prototype will have one of the following futures: selling the license to another company, establishment of a new company (spin off company), failure in the marketing due to unavailable market.

Behavior pattern in risk-taking companies in the commercialization of nanotechnology products in the field of medicine is totally different from that of institutes to the extent that ideas are usually given to the companies by other institutes or individuals. Moreover, market evaluation and suggestion of consultants can be the source of risk-taking investment. The companies develop the product by providing the cost required for the commercialization of the product. There are usually two approaches for the commercialization of the products:

- 1- Commercialization through the selling of the product or the license to other companies;
- 2- Commercialization through creating a start-up.

The start-up can provide new ideas for the risk-taking company in future. In fact, the start-up can be the provider of new ideas for the risk-taking company.

Commercialization of nanotechnology products in medicine is usually carried out through the injection of ideas from institutes, risk-taking companies, and individuals. Market evaluation and supervision of the company's consultants can be used for idea creation too. The ideas are studied in research and development section, and they enter commercialization process after the confirmation. Commercialization can be creation of a new product or improving current ones.

In general, commercialization pyramid for nanotechnology products in medicine can be drawn as a way research institutes are the cores to create ideas, and they can be active in the development and commercialization of products. Risk-taking companies stand on the second step of the pyramid. These companies are able to commercialize the product and convert the idea to the product and they also are the host of scientific findings in research institutes. Commerce companies are on the top of the pyramid, which are active in the conversion of idea to product, and in receiving prototypes made by research institutes and

risk-taking companies.