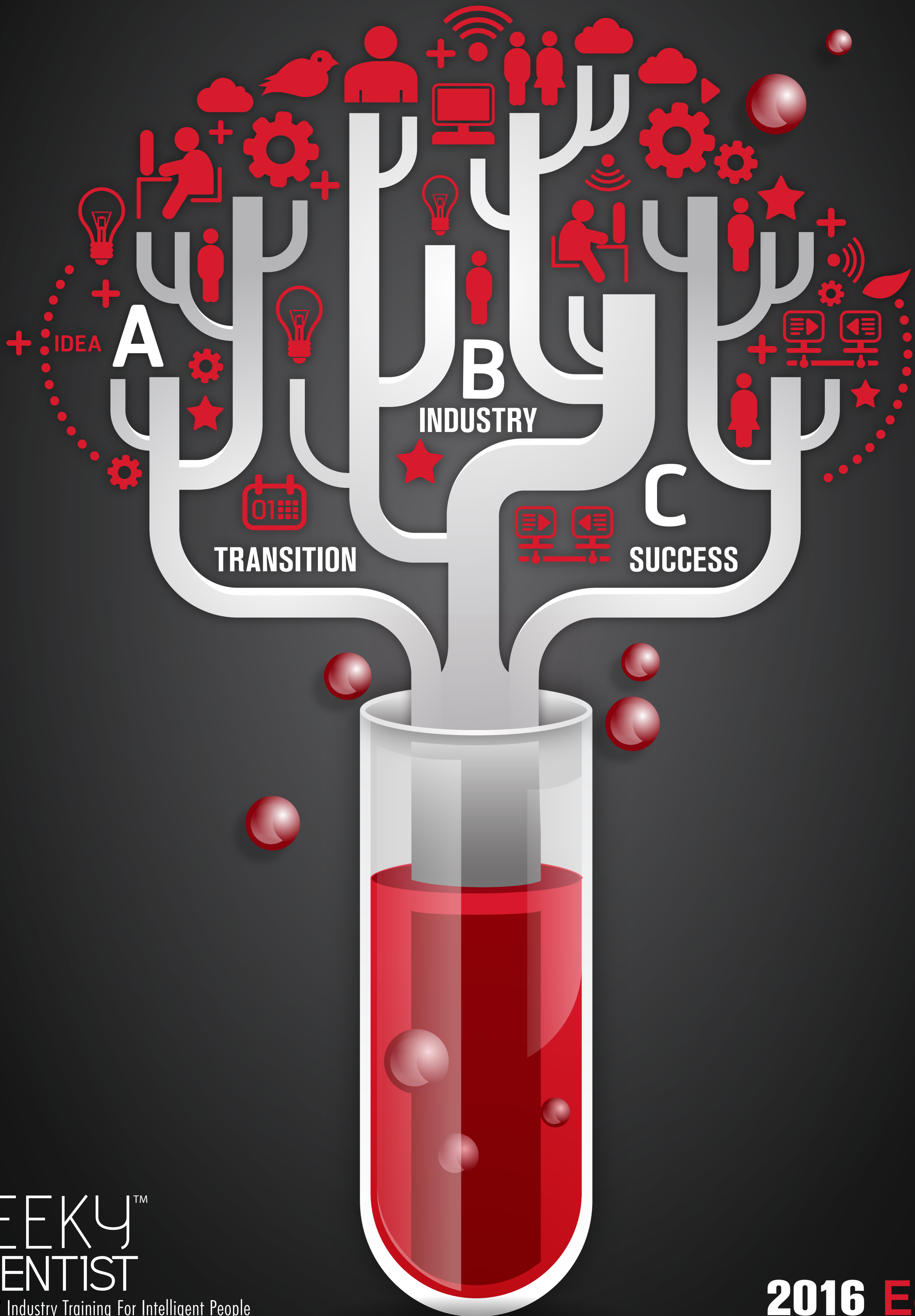


# TOP 20 INDUSTRY POSITIONS

For **PhDs**



# **TOP 20** **INDUSTRY POSITIONS**

For **PhDs**

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# **TOP 20** **INDUSTRY POSITIONS**

For **PhDs**

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# APPLICATION SCIENTIST

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“THE TEACHING EXPERIENCE YOU GAINED IN GRADUATE SCHOOL WHILE SUPERVISING OR TEACHING UNDERGRADUATES WILL ALSO PROVE TO BE A KEY TRANSFERABLE SKILL IN THIS CASE.”

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**T**he application scientist position is a role that is often overlooked by job-searching science PhDs because they believe it is a traditional sales role that requires little or no scientific technical knowledge, and lacks parallels to the skillsets common to PhDs. In reality this assumption is pretty far from the truth. **The demand for PhDs in application science has been increasing and it is not uncommon to find application scientist job postings requiring PhD experience.**

One challenging aspect in searching for these roles is that different organizations use different nomenclature to refer to the same position. But whatever you find – Application Scientist, Field Application Scientist, Technical Support Scientist, or Field Support Scientist – in most cases these terms essentially describe the same professional role.

This role is especially suitable for those who want to move away from the research bench towards more business-oriented roles (for example, business development or project management), but are unsure of their path and want to gain more non-academic experience in a transitional

position. **Application Science will provide the ideal platform to sharpen your business knowledge and build relevant industry expertise**, because in this role you benefit from performing many tasks where you require diverse skills and knowledge on a daily basis.

**Besides technical knowledge related to research and specific lab equipment, good communication skills and an ability to explain instructions in an uncomplicated fashion are desired qualities for this role.** Considering that there may be travel requirements, you will meet many new people, and those who have interpersonal skills and are less hesitant to interact with strangers are more likely to be successful in this position.

Another important component of this role involves training sales support staff, so having presentation skills is desirable. **The teaching experience you gained in graduate school while supervising or teaching undergraduates will also prove to be a key transferable skill in this case.** As troubleshooting problems for customers is a key task for application scientists, one of the most vital skills necessary is the ability to think critically and solve problems within a limited time.

As you are continuously meeting new people and helping them solve problems, **a significant secondary benefit of this role is that it offers an excellent platform for building a wide network.** As mentioned, these tend to be a transitional roles and within a few years the vast majority of application scientists move on to higher positions in other divisions such as business development or marketing. The network you build during your time as an application scientist will prove to be an asset for career progression.

### Example of organizations offering **Application Scientist** opportunities

- ▶ **Thermo Fisher Scientific**
- ▶ **Life Technologies**
- ▶ **Biorad**
- ▶ **ManTech International Corporation**

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# QUANTITATIVE ANALYST

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“OVER THE LAST 10 YEARS EMPLOYMENT OPPORTUNITIES FOR QAs IN THE US HAS GROWN BY 29.04 PERCENT.”

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**T**his is another career which is almost unknown to science PhDs, even though it can be one of the most financially lucrative professional roles open to them. Someone involved in academic research may find it hard to believe that they can apply for a position in a financial organization.

**The most direct path into a quantitative analysis career is through a PhD in one of the “quant” disciplines such as Mathematics, Statistics, Physics, Engineering, or certain areas within Computer Science.** Although a Masters in Finance possesses the required qualification, PhDs are sometimes preferred by firms because of their proven ability to conduct independent research.

**The most direct path into a quantitative analysis career is through a PhD in one of the “quant” disciplines such as Mathematics, Statistics, Physics, Engineering, or certain areas within Computer Science.** Although a Masters in Finance possesses the required qualification, PhDs are sometimes preferred by firms because of their proven ability to conduct independent research.

Even though conducting research constitutes a substantial part of quantitative analysts' duties, there is one key difference from academia. As investment information is highly time-sensitive you have less time to carry out the research. **The ability to work under pressure and with little supervision is seen as a desirable trait among quantitative analysts.** Regardless of your specific academic background (Maths, Physics, or Computers) **the key traits required to be successful in this field are financial knowledge, grasp of mathematical concepts, and competency regarding specific computer programs.**

As almost every industry is being affected by globalization, some financial firms prefer their analysts to not only concentrate on a specific sector, but to also focus on a specific geographical region or country. In this case, along with your financial analysis skills you will be expected to gain extensive expertise in economic policies, political trends, and even the cultural aspects of that region. The ability to speak and read a foreign language can also prove to be beneficial in this scenario.

**Analysts tend to specialize in one specific industry sector (IT or energy, etc.) in their initial years.** With experience, quantitative analysts can progress to the role of portfolio manager; entrusted with overseeing multiple entry-level analysts. Alternatively, some analysts transition to other related positions such as Hedge Fund Analyst, or for those with computer background, Quantitative Computer Model Development. Some quantitative analysts may go on to become fund managers who are generally employed by individual investors for managing their investments.

Considering its financial reward, it is not surprising that these positions are some of the most highly competitive careers, and after the financial crash of 2008, the selection process has become even tougher. Therefore, anything you can do to distinguish yourself from the competition will prove to be beneficial. For those still in graduate school and serious about pursuing this career, getting a certification in financial analysis will put you well ahead of the competition.

As the financial sector continues to recover and grow after the financial

crisis of 2008 the hiring trend for QA is predicted to be promising. **Over the last 10 years, employment opportunities for QAs in the US has grown by 29.04 percent, and are expected to keep increasing. According to recent labor statistics, QA positions are expected to grow by 20% through to 2018.**

Example of organizations offering **Quantitative Analyst** opportunities

- ▶ JP Morgan Chase & Co
- ▶ Bank of America
- ▶ TD Bank Financial Group



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# SCIENCE PUBLIC POLICY ADVISOR

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**“A LOT OF POSTDOCTORAL FELLOWSHIPS ARE BEING OFFERED BY FEDERAL AGENCIES FOR FACILITATING THE TRAINING OF SCIENCE PHDS IN PUBLIC POLICY.”**

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If someone were to walk into a science conference and ask all the scientists how many of them are satisfied with current science policies and laws, most likely only a few hands would go up. If you are an advanced science degree holder (MD or PhD) and want to be a catalyst for change, following a career in Science Public Policy is your opportunity to take action. **There are various types of public policy positions available, but the professional role most suited for someone with a science PhD is that of a Science Public Policy Advisor.**

**This position will require you to not only understand science, but also efficiently communicate with policy makers. In short, you will act as a bridge between the scientific and bureaucratic worlds.** In this role you will do a lot of negotiating, explaining, and communicating with people who don't have a scientific background. Interpersonal skills, communication skills, and the ability to persuade people will be

important. As politicians will form a large proportion of your target audience, patience and diplomacy are highly valued attributes.

All of us have been frustrated by political inaction from time to time. But when it comes to science policies, a lot of the time a government's failure to take action for rectifying a certain issue is not because of a lack of will, but rather a lack of awareness. **Therefore, one of the key contributions of science public policy advisors is to gather information, analyze the problem, suggest a solution, and present it in condensed format to the relevant government department.**

**Keeping up with continuously changing rules and regulations and ensuring everyone involved in decision making is made aware of these changes is also an important part of a science public policy advisor's duties.** As we know, there is a disconnect between those involved in research and those who formulate the policies affecting crucial aspects of research, such as funding or laws of bioethics. Therefore, science PhDs who have moved into the realm of science policy can play an important role in bridging this gap. In order to achieve this they often **organize conferences to foster communication between scientists and policy-makers, which offers a common platform for the exchange of ideas.**

If you decide on a career change after a few years, the skills you will pick up in this role will also prove to be beneficial in administrative roles. **Professionals with public policy experience are highly sought after for administrative roles in both academia (Dean or Provost) and in industries which regularly deal with government agencies.**

With growing concerns over climate change, complexities surrounding regulating biotech products, changing energy needs, and changes in healthcare, there is an increasing demand for science PhDs who possess the required skills and are willing to get involved in public policy. In fact there is a shortage of professionals in this field and this can work to your advantage. **To counter the lack of science PhDs adequately trained for a science public policy career, a lot of postdoctoral fellowships are being offered by federal agencies for facilitating the training of science**

**PhDs in public policy.** These can provide you the ideal gateway into a full time public policy advisory role.

The main places to find science public policy career opportunities are government agencies. So instead of providing you with examples of organizations, here is a list of training and scholarship programs in public policy offered to science PhDs through government agencies:

### Science Policy Fellowships and Internships offered by governments

#### **UK**

- ▶ The Royal Society's MP-Scientist pairing scheme

#### **US**

- ▶ AAAS Science Policy Fellowships
- ▶ Christine Mirzayan Science and Technology Policy Internship — by The National Academies of Science and Engineering
- ▶ Presidential Management Internship — by U.S. Office of Personnel Management

Some scientific organizations also offer science public-policy oriented postdoctoral scholarships:

- ▶ American Chemical Society
- ▶ American Institute of Physics

#### **Canada**

- ▶ CIHR Policy Research Initiative

#### **Australia**

- ▶ CSIRO Postdoctoral Fellowship Scheme
- ▶ ANSTO Postdoctoral Research Fellowships

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# PRODUCT MANAGER

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“AN EMPLOYMENT SURVEY CONDUCTED IN 2012-2013 REPORTED THAT DEMAND FOR THIS POSITION EXPERIENCED A 23% GROWTH.”

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In today's society it is hard to find any aspect of life that has not been influenced by technology. This might indicate that the success of any company is primarily dependent on the engineers and scientists who invent these products. However, before the technology experts can start R&D, there is someone who determines what they should concentrate on developing and what new product is necessary to successfully invent, produce, and commercialize. This is the role of a Product Manager. **To put it very concisely, a Product Manager (PM) is responsible for managing the entire life cycle of a product.**

**Product manager is a multifunctional role that demands collaboration across multiple divisions of the organization.** Your responsibilities will not be limited to advising scientists and engineers where to focus their expertise. Even before that, as a PM you must understand problems in the real world, communicate with your marketing team, and find innovative solutions to existing problems. Your interaction with marketing or other divisions won't stop with product creation. **You will continue collaborating with multiple divisions to develop the**

**ideal go-to-market strategy, identify target customer demographics, and plan product branding.**

It is understood that for a position like this, technical knowledge of your specific sector is essential. However, scientific or technical expertise alone is not enough for this role. **Along with an understanding of technology, you must possess a unique blend of business acumen, a creative outlook to envision new products, and understanding of the competitive landscape.** Above all you should have a big-picture mentality and the drive to take an initial idea and transform it into a commercially successful reality. If you are comfortable interacting with people outside the technical field and enjoy working with a diverse group of people, then you will enjoy this role.

For a science PhD aspiring to be a PM it is important to remember an overall knowledge of the entire sector — not just your specific graduate research topic — is required for this role. Use your network to gain industry knowledge. As a PM requires collaboration with almost every department to fulfill her or his vision, it is very important to have excellent communication and interpersonal skills. Without this, you may struggle to convince others, from the CEO to the scientists, about the potential of your novel idea.

Your work as a PM continues after the product is developed and marketed. **A PM also oversees the management of a product after its launch, analyzes market performance, looks for possible commercialization partnerships, determines ways to boost commercial success, and also contributes in determining how to terminate an older version of a product.** As mentioned previously, a PM plays a strategic role across the entire life cycle of a product.

One can find this career opportunity in almost all major organizations. However, for science PhDs it is logical to target innovation-based sectors, such as electronics, IT and software, biotechnology, and pharmaceutical industries. **It is important to remember that advanced science degree holders can often enter a company in a technical role**

and then internally transition into a PM's role.

**An employment survey conducted in 2012-2013 reported that demand for this position experienced a 23% growth**, which is significantly higher than the national average of most other professions.

Science PhDs with the necessary attributes are highly sought after because there is a lack of science advanced degree holders who have good communication skills, business insight, a creative outlook, industry knowledge along with their technical expertise. There is no doubt that a PM's responsibilities can be demanding. **However, it is also one of the most fulfilling roles as it offers you a platform to play a crucial role in bringing a new invention to market and thus make a tangible positive impact on people's lives by solving real-world problems using the power of innovation.**

### Examples of organizations which offer this opportunity

- ▶ Google
- ▶ Johnson & Johnson
- ▶ Baxter International
- ▶ Bio-Rad Laboratories
- ▶ Pfizer
- ▶ Siemens
- ▶ Apple

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# CLINICAL TRIALS PROJECT MANAGER

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“PRESENTATION AND TEACHING SKILLS, WHICH YOU ACQUIRED DURING YOUR PhD TRAINING, WILL PROVE TO BE VALUABLE TRANSFERABLE SKILLS FOR THIS ROLE.”

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Science PhDs who are involved in research are well aware of the importance of preclinical research associated with new innovations in the medical field. But this phase is only the beginning of a medical innovation, and the clinical trial that follows it is equally important for the commercialization of a new advancement.

After the preclinical research phase every novel therapy or medical device needs to gain approval from the appropriate regulatory body (such as the FDA) and in order to do so it has to go through a long and stringent clinical trial process. **Ensuring the smooth functioning and monitoring of clinical trials, while maintaining compliance with regulatory guidelines are the key responsibilities of a Clinical Trials Project Manager.**

As the name suggests, a Clinical Trials Manager is responsible for the overall management and successful completion of clinical trials. **The ability**

**to become familiar with the rules and technical terms common to FDA regulatory processes, such as randomization and data management, is an absolute necessity for this role.** This role will also require you to conduct the recruitment of an appropriate number of subjects for the trial, and secure approval from the various ethics boards.

A clinical trials manager is entrusted with a lot of documentation. You will be writing protocols for studies, creating clinical research forms (CRF) and preparing other key documents that are used to collect clinical data. **Your scientific writing skills will prove to be a great transferable skill for this role.** Early and accurate rectification of issues is crucial for the success of any clinical study. **It is crucial to interpret data correctly and be able to forecast the direction in which the study is heading.**

Clinical trials require efficient co-ordination across a number of different professional departments and review boards, so being proficient in maintaining communication and facilitating collaboration is essential to success in this role. **Hence, good communication (both written and oral) and strong interpersonal skills are sought-after qualities for this position.**

Failure to achieve timely completion of clinical trials not only results in huge loss of resources, but also possible rejection of approval for the invention. **Consequently time management and coordination with everyone involved in the project is essential if you want to pursue this career.**

Most major clinical trials are multi-site (or even multinational) so traveling for work and interacting with people belonging to diverse linguistic and cultural backgrounds are integral parts of this role. Clinical trial managers not only oversee trials but they are also responsible for training clinical research associates (CRA) and data management professionals. **The presentation and teaching skills which you acquired during your PhD training will prove to be valuable transferable skills for this role.**

You can find this specific role in **three different kinds of organizations; specialized Clinical Research Organizations (CRO), research hospitals, and major pharmaceutical companies** which conduct trials for their



own drugs. According to the Bureau of Labor Statistics, the healthcare industry is projected to create 4 million new jobs between 2008 and 2018. Moreover, with the recent expiration of patents for multiple top-grossing drugs, there has been a recent push towards R&D and trials for expediting the commercialization of new drugs. As a combined effect of these factors the **revenue of the clinical research sector is projected to grow from \$11 billion to \$23 billion in a period of 5 years and hence, job growth in this field is expected to be significantly higher than that of other sectors.**

### Examples of organizations which offer this opportunity

- ▶ Parexel International
- ▶ Quintiles Transnational
- ▶ Pharmaceutical Product Development, LLC (PPD)
- ▶ ICON plc

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# COMPETITIVE INTELLIGENCE ANALYST

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“TURNING INFORMATION ABOUT COMPETITORS INTO ACTIONABLE INTELLIGENCE FOR YOU OWN ORGANIZATION WILL BE YOUR GOAL.”

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A large number of science PhDs and postdocs are willing or even eager to transition into industry, but there is a lack of information on finding alternatives to the traditional academic career path. In addition to being unaware of the different roles, some PhDs also believe that they may not possess transferable skills required to be successful in these non-academic roles.

Most PhDs have been led to believe that they will be required to go to school again to get another degree (such as an MBA or JD) in order to make them suited for careers outside academia. On the contrary, there are certain industry positions where PhDs can be successful by applying the skills they already possess — and **competitive intelligence (CI) analyst** is one such position. **This position will give you the opportunity to apply your technical knowledge as well as your skill in analyzing large volumes of information gained during your years of PhD training.**

In this role, gathering information about your competitor's products (or inventions in the pipeline) and then analyzing how these might affect your organization will be your key responsibilities. This isn't spying, nor is it unethical. There are several ethical and legal sources through which organizations can obtain information about their competitors. **Aside from working in a company involved in any of the technology-based sectors, you can also find employment as CI analyst in specialized CI firms.** These CI firms are usually dedicated to one technology sector and offer CI services for their clients.

To be successful as a CI analyst you must be able to gather information and then critically analyze it. **In short, turning information about competitors into actionable intelligence for you own organization will be your goal.** Your input will be used to determine threats or opportunities in advance. One of the main functions of the CI team is to utilize knowledge about the competitor's position and support the management in making strategic decisions so that they can design the appropriate game plan to compete with rivals.

**You will be required to gather information from key opinion leaders (KOLs) in the specific field, attend scientific conferences and go through online resources.** Instead of learning about only your own organization's product or technology, this role provides you an opportunity to study the external environment of the entire sector and learn to apply it for decision making, which can be an asset in career growth. CI can be a gateway to higher executive positions, as indirectly you are already contributing in decision making and connected to the main decision makers of your organization.

According to a Global Intelligence Alliance survey (2011) the industries which put the most importance on CI are **IT and software, healthcare (including pharmaceuticals), financial, energy, and manufacturing sectors.** These same sectors were predicted to be most likely to offer employment opportunities for entry-level CI professionals in the coming years. **In another survey, professionals involved in hiring were asked about future prospects for CI analysts, and 60% of respondents**

reported that the future hiring trend for CI professionals looks positive, and in the next few years there will be increase in hiring of entry-level positions.

### Examples of organizations which offer this opportunity

- ▶ IMS Health
- ▶ Sedulo Group
- ▶ Deallus Consulting
- ▶ Fuld & Company

Besides these CI firms that are solely dedicated to CI almost all major technology oriented companies have in-house CI opportunities.

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# BUSINESS DEVELOPMENT MANAGER

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“BUSINESS DEVELOPMENT WAS RANKED IN THE TOP 100 IN TERMS OF GROWTH, EARNING POTENTIAL, AND WORK SATISFACTION.”

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The overall goal of a business development manager (BDM) is to ensure long-term business growth. At first glance it might appear that these duties do not require any technical knowledge. While this might be true in the case of finance or the banking sector, it does not hold true for technology-based industries. In order to function efficiently as a business development professional in a biotechnology or software organization it is imperative to have detailed understanding of the technological aspects.

In most management roles MBAs are preferred over other degree holders but **owing to its multifunctional nature there are no specific qualifications to become a BDM.** This can work in your favor if you are a science PhD and interested in transitioning to Business Development (BD). If you have the right combination of scientific knowledge, analytical skills, interpersonal skills and basic business knowledge it can open up opportunities in BD.

A BDM's key responsibilities include **developing new business opportunities, managing existing products, developing market strategy, and building new business partnerships.** As a BDM you will have to decide which new innovation among those in the pipeline should be given priority based on market needs and the positioning of competitors. Therefore, thorough knowledge of a company's culture, its products and the sector is critical.

**You will need combination of technical knowledge, analytical skills, and an understanding of current developments in the market to forecast what will be required to increase sales and compete with the main competitors in the sector.** A PhD's presentation and teaching skills will also be valuable as BDM because they are expected to deliver training to new members of the BD and marketing teams. This role requires frequent collaboration especially with those in marketing and sales, so **it is essential to have a cooperative attitude.**

**Besides technical knowledge, understanding of business strategies, marketing, and commercialization is necessary for this role.** Science PhDs sometimes miss out on these positions due to their lack of business skills. However, if you are keen on pursuing a career in BD there are a number of possible ways in which you can gain basic BD knowledge and thus make yourself more attractive to prospective employers. If you take these steps proactively while you are still working on your PhD or postdoctoral training, it will make you stand out from other science PhDs trying to break into business development. **First, you might be able to take business courses offered by the business school of your university.** In some cases your department might even offer a tuition waiver for these extra courses. With the growing economic importance of technology oriented sectors, several management departments even offer specific business development courses tailored for business management in technical sectors such as biotechnology or the IT industry. There are also some short BD certifications designed for people who wish to transition into business. **Another way of bolstering your resume for a BD position is to involve yourself in the formation of a startup** being developed based on an invention from your university. For this you should

build a network or even offer to volunteer at the office of technology transfer—an office on campus that handles intellectual property resulting from the research taking place at the school. This will give you practical BD experience even before you graduate.

According to a recent career survey (CNN Money, 2013) that compared a vast number of careers based on growth, earning potential, and work satisfaction, **business development was ranked in the top 100 with a projected growth rate of 16.4%.**

You must keep in mind that this is a multifunctional role, and the exact role of a BDM will vary depending upon the size of the company and what stage of growth it is in. **Professionals with scientific backgrounds often enter an organization in a technical role such as R&D and then, once they have acquired some industry knowledge, they can internally transfer to a business development role.**

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# INTELLECTUAL PROPERTY LAWYER

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“A CAREER IN PATENT LAW CAN NOT ONLY BE REWARDING BY ITSELF, BUT IT CAN ALSO OPEN UP DOORS TO VARIOUS OTHER HIGH LEVEL EXECUTIVE ROLES LATER.”

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**W**hen a researcher discovers a new invention with significant commercial value it cannot be immediately commercialized. There are various steps involved between invention and commercialization and one of the first and most essential steps after invention is to protect the intellectual property (IP) through filing for a patent. This crucial step is the responsibility of an Intellectual Property Lawyer also known as Patent Lawyer.

In order to be successful in this field IP lawyers have to be equally knowledgeable in technology and patent law. That is why almost all IP lawyers possess an advanced science degree in the specific sector in which they operate. **In the case of Life Science IP law, a very large proportion of IP lawyers have a PhD and some even have multiple years of postdoctoral training experience from reputable academic institutes.**



As with every other professional role there are several possible paths one may follow to become an established IP lawyer but there are two possible career progression paths which are most common. You can get a PhD or other advanced degree in a scientific field and then go to law school. After law school you can apply to IP law firms for an IP lawyer's position. The second option is to get a PhD in science and join a law firm that practices patent law as a scientific consultant, and start gaining IP law knowledge through your work. The firm may offer you the opportunity to go to law school while you are still working. In many of these cases the law firm pays the tuition. **In either situation, before you are eligible to litigate IP cases you will be required to pass a patent law examination offered by the USPTO, which is commonly known as the patent bar.**

**This field is suitable for those science PhDs who are detail-oriented and do not mind a lot of reading and writing.** The key transferable skills for this role are detailed subject knowledge, technical writing skills, and the ability to conduct research to find specific relevant information. While in the job you will need to pick up legal terms, search patent databases, and draft patents. One exciting part of this profession is that **you will have access to confidential information about most recent scientific inventions.** You will be instrumental in helping these developments to achieve commercial success.

As is obvious from the responsibilities of an IP lawyer, the most likely places to find this opportunity will be in IP law firms. However, you can also find employment in this role in several technology-based organizations that have their own legal or IP divisions and also in some major research institutes such as the NIH.

**A career in patent law can not only be rewarding in its own right, but it can also open up doors to various other high level executive roles.** Owing to an understanding of legal material and knowledge of the sector in which they are employed, IP lawyers **are highly sought after as consultants for growing organizations.** Qualified, experienced IP lawyers are often offered the **opportunity to serve as advisors for startups.**

IP lawyers work with a range of professionals from academic researchers to the owners of startups, which facilitates the development of a substantial network of talented contacts which can be valuable for further career progression.

### Examples of organizations which offer this opportunity

- ▶ **Foley and Lardner, LLP**
- ▶ **Kilpatrick, Townsend and Stockton**
- ▶ **Cantour Colburn LLP**
- ▶ **Buchanan Ingersoll & Rooney PC**

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# RESEARCH ANALYST IN VENTURE CAPITAL

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“THIS ROLE OFFERS A GREAT LEARNING OPPORTUNITY FOR THOSE OF YOU WHO HAVE ENTREPRENEURIAL ASPIRATIONS.”

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**V**enture Capital (VC) firms are organizations that use capital provided by a group of investors to finance startups or small businesses. They offer much needed fiscal support to early-stage businesses, and in return they benefit from the long-term growth and financial success of these businesses. Once a startup in which a VC firm has invested is acquired by larger company or goes public, the investors of the firm profit.

**You will be wondering how someone with an advanced scientific degree can fit into an organization involved in investing capital.** Well, VC firms, which are focused in investing in technology-based sectors such as pharmaceuticals, IT, and biotechnology hire professionals with advanced degrees in science as **Research Analysts. This profession is one of the least known career paths available to science PhDs.**

The goal of technology-oriented VC firms is to invest in and facilitate

growth of small businesses dealing with commercialization of new technologies, and once they are successful, make profit. This might sound straightforward but it carries substantial financial risk because in a competitive market, return on investment is not always guaranteed. So before smart investors put money into a new business they'll seek assurance about the likelihood of making a profit. **Every idea pitched to VC firms goes through rigorous due diligence and this is where professionals with detailed technological knowledge play an important role as research analysts.**

The main responsibilities of a research analyst are to identify new investment opportunities, evaluate new inventions, and determine if they will be worthy of investment. **You will be required to conduct deep analyses of the new technology, identify its competitive advantages and predict its chances of being successful.** In short, you will be providing research support to the investors and aiding them in selecting the best possible investment opportunities. **As a research analyst it is also important to be aware of all the current technological and commercial developments in your firm's sector.** Besides scientific knowledge, in order to be successful in this field you must be an **efficient networker, possess good presentation skills, and have the ability to recognize the potential of commercial success in a new technology.** In order to find leads you might have to make cold calls, attend scientific conferences and go to networking events. This is definitely not a position for someone who prefers to work alone and is not comfortable with regularly meeting new people.

Besides specialized VC firms which invest in technology-based industries you can also find employment in some large private companies who are involved in corporate venture capital. These are mostly large pharma or software companies. These larger organizations offer seed funding or growth stage capital to smaller organizations in their own sector with the prospect of a merger, or acquisition, or some other commercial partnership later on.

This role offers a great learning opportunity for those who have

entrepreneurial aspirations. According to a National Venture Capital Association report, investments by VC firms resulted in revenue worth \$3 trillion and supported 12 million jobs. (NVCA 2012) You may also find it fulfilling to know that you are directly contributing to job creation and helping society by bringing beneficial new innovations to the market.

### Examples of organizations which offer this opportunity

#### **VC Firms**

- ▶ HIG Ventures
- ▶ Sequoia Capital

#### **Companies with Corporate VC division**

- ▶ Siemens – Siemens Venture Capital
- ▶ Google – Google Ventures

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# MARKET RESEARCH ANALYST

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**“A SCIENCE PhD’S ORAL PRESENTATION SKILLS AS WELL AS TECHNICAL WRITING SKILLS WILL PROVE TO BE VALUABLE TRANSFERABLE SKILLS.”**

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**T**he title of Market Research Analyst may lead science PhDs to assume that this is a traditional marketing role and someone like them with scientific, academic background will not be suitable for it. Actually, it is quite the opposite. Market Research requires a lot of analytical and quantitative skills as well as technical knowledge of the sector, so this position can be a great alternative to traditional academic roles for science PhDs.

This role is available in almost every industry, but it is especially significant in innovation-based sectors such as electronics, IT, or biotechnology. Aside from major technical organizations, you can also find this kind of role in market research firms whose sole purpose is to conduct market research for their clients.

**As a market research analyst you will be expected to gain a thorough**

**understanding of the commercial landscape associated with a specific technology or sector.** The main goal of a market research analyst is to analyze the market data and help the decision makers in the organization estimate the degree of commercial success they can expect regarding a specific product or in a specific sector.

**Responsibilities will include gaining information about the market and evaluating the key advantages and disadvantages of the product compared to existing comparable products in the market.** You will apply this information and your technical expertise to create reports outlining the key niches for commercialization, estimate the market size, identify current major players in the sector, and also recognize possible future competitors. Your findings will act as an essential tool for the administrative team to design the ideal pathway for the commercialization of a product, estimate commercial success (revenue) and avoid pitfalls in the process. This is a rapidly growing profession and **according to the Bureau of Labor Statistics it is projected to experience a job growth of 20% from 2004 to 2014 (BLS, 2006).** As **innovation-based industries grow and competition becomes global there will be an increasing need for people with technological backgrounds for analyzing competing technologies.**

Besides the obvious technical and scientific knowledge, a science PhD's ability to analyze and decipher large volumes of information and identify the advantages or drawbacks of one method compared to another will be valuable skills for those transitioning into this role. You will not only be analyzing but also presenting your findings in both oral and written format. **Therefore, a science PhD's oral presentation skills as well as technical writing skills will prove to be valuable transferable skills.** As market research analysts provide input (and thus influence business strategies) and work in collaboration with strategic decision makers, you will be constantly communicating with the main decision makers of the organization. **Hence, this role can open up doors to higher management positions.**

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# TECHNOLOGY TRANSFER OFFICER

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“IT KEEPS YOU AT THE FOREFRONT OF NEW INNOVATIONS COMING OUT OF MULTIPLE LABS AND OFFERS AN IDEAL BLEND OF ACADEMIC RESEARCH AND BUSINESS DEVELOPMENT.”

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**H**ave you ever wondered if you (or your research team) ever invent something that has direct translational value, what steps will be necessary to actually bring it out in the market? As you can imagine, it is a long and complex process and one of the crucial parts of this process will be applying for patent(s) and dealing with the intellectual property law associated with your invention.

This is one of those rare opportunities which is **right there in your university, and can give you an exposure to the world outside academic research without even leaving your campus.** The purpose of a university's Office of Technology Transfer is to manage intellectual property resulting from research conducted in the university and facilitate the commercialization of these innovations.

Almost every major research institute, university, and research hospital



employs science PhDs as Technology Transfer Officers. The licensing of technologies is a major source of revenue and universities wish to see return on their investment in research. According to the Association of University Technology Managers (AUTM) "Licensing activity survey FY2008" (2010) **a total of 3,208 patents were granted to university research personnel, and licensing fees of technologies from institutions of higher education generated a total of about \$2.5 billion** in the fiscal year 2008. In the same year, research faculties across the nation created 595 new companies utilizing the technologies they invented. And all this happened through the technology transfer offices of these research organizations.

**As a technology transfer officer, your goal will be to identify promising technologies, manage intellectual property (IP) portfolios, search for opportunities for the licensing of these inventions, and facilitate the foundation of start-ups based on the university's research.**

**This keeps you in touch with new innovations coming out of multiple labs, and offers an ideal blend of academic research and business development.** As you will be working in close collaboration with the inventors, this career will enable you to be involved with the commercial aspects of a technology sector without being completely detached from academia.

This position offers you the ideal platform as a science PhD to develop skills which will help you to transition to other careers. As you will constantly be dealing with USPTO submissions, managing patent portfolios, and patent deadlines, you will gain the basic knowledge required for IP law career. Additionally, you will be working with startups that are being spun off from the university's invention. This will offer you the opportunity to acquire business strategy and business development knowledge. **Tenure as a Technology Transfer Officer can also be a great pathway to transition into business development roles in industry or a career in IP law.**

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# MANAGEMENT CONSULTING

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“IN RECENT YEARS SOME OF THE MAJOR CONSULTING FIRMS HAVE EVEN STARTED CONSULTING WORKSHOPS OR SHORT INTERNSHIPS SPECIALLY DESIGNED FOR SCIENCE PHDS, POST-DOCS AND MDs.”

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**A**s recently as a decade ago, consulting firms employed only MBAs as consultants, but in recent years — with a steady rise in innovation-based business — there has been a significant rise in the number of science PhDs being hired by consulting firms. **You may not have considered consulting, but consider that as a PhD, you are already proficient in identifying specific issues and solving complex problems through critical thinking.** In the consulting world science PhDs are increasingly in demand for the ability to utilize their technical knowledge to troubleshoot problems and help companies develop better strategies for success. There is a myth that in order to get into consulting you must possess prior business knowledge. While this might be of some assistance, the lack will not exclude a science PhD from opportunities in consulting. Even the most reputed global consulting firms have specialized job opportunities for advanced science degree holders such as PhDs and MDs.

If you are still concerned about a lack of prior business or strategy experience, you will be happy to know that **in recent years some of the major consulting firms have even started consulting workshops or short internships specially designed for science PhDs, Post-docs and MDs. This is generally offered to newly hired science degree holders for a few weeks and is often referred to as a “mini-MBA”.** This prepares science PhDs or MDs for the business world.

The ability to solve challenging problems and design strategies is crucial for success in this field. As you will be working in a collaborative environment, prospective employers are looking for teamwork and communication skills, and leadership capabilities. The ability to present your findings both as oral presentations (PowerPoints) and through writing are also valuable skills. **Brainstorming in groups, being analytical, and delivering solutions to technical problems are key requirements for success as a consultant.**

Even though you are troubleshooting and applying analytical skills in a manner similar to scientific research, there are two key differences to consider. One of the main obstacles that scientists transitioning to consulting face is that they must provide solutions in a relatively short amount of time compared to academic research. Another difference is that while offering a solution it should be done keeping the big picture in mind, rather than taking a long time to deeply analyze a highly specific problem. **This change in habit may become more comfortable over time.** One mistake science PhDs often make while trying to transition into consulting is that while applying for consulting firms they only target well known, larger firms like McKinsey or Boston Consulting Group. Instead of limiting yourself to a handful of firms you can increase your chances by applying to smaller ‘boutique’ consulting firms that cater specifically to clients in one specific technology-based sector (Biotechnology or IT, etc.). If you apply to one of these smaller firms which are involved in consulting in your research field, you have a much better chance of getting hired. Once you gain some experience you may be able to secure a position in one of the larger well known firms.

According to a Bloomberg report (2013) the consulting market is expected to experience an overall annual growth of 3.7%. The same report stated that in the year of its publication, 2013, the management consulting market grew by 8.5% to a total value of \$39.3 billion.

One major advantage of consulting is that it is known to open up a lot of doors to a variety of opportunities once you decide to move on beyond consulting. After leaving consulting firms, successful consultants have gone on to become entrepreneurs, advisors for startups, teachers in business schools and even to hold management positions in technology-based industry.

### Examples of organizations which offer this opportunity

- ▶ McKinsey
- ▶ Boston Consulting Group
- ▶ Deloitte
- ▶ L.E.K Consulting

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# PATENT AGENT OR SCIENTIFIC ADVISOR

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“YOU WILL BE CONSTANTLY EXPOSED TO CUTTING-EDGE TECHNOLOGY AND LEARN ABOUT A BROAD RANGE OF NEW INVENTIONS IN A FAIRLY SHORT AMOUNT OF TIME.”

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**T**echnology-based industries as well as academic research institutes are judged by the number and quality of novel innovations they produce. One of the key components in the process of innovation and its commercialization is the protection of intellectual property. Without a patent it is impossible for a new invention to progress beyond the research laboratory. Science PhDs with knowledge of the legal field can be involved in this legal process in a few different roles. We have discussed IP law, and mentioned that a science PhD can become a patent attorney by going to law school after acquiring a PhD. But **law firms that deal with intellectual property also hire PhDs as scientific advisors or patent agents. For this role you are not required to have a law degree. As a patent agent you can play an important role in the drafting, submission, and securing the final approval of a patent.**

Generally, a science PhD is hired as a scientific consultant and is mostly involved in searching patents and conducting scientific due diligence, and

this gives one an opportunity to learn about the legal field. Advanced science degree holders who join the firm as scientific advisors are expected to clear the USPTO examination (commonly known as the patent bar) and become patent agents. They are generally given one year by a law firm to prepare for and clear the USPTO examination. Once you pass this exam you are eligible to function officially as a patent agent.

**Patent agents conduct patent prosecution, and an in-depth scientific expertise is useful in researching technical documents associated with legal issues. They are also eligible to draft patents.** In most cases once a science PhD has gained two to three years of work experience in the legal field, they choose to go to law school. If an advanced science degree holder is interested, some law firms even pay for their patent agents to go to law school and become patent attorneys. They may continue working as patent agent during the day and attend law school in the evening. The majority of well-reputed law programs offer evening classes designed for working legal professionals.

Besides having technical knowledge, the most important quality required for being successful in this role is strong writing skills. As a patent agent, this is what you will be doing much of the time. Although you will be utilizing your scientific knowledge, writing legal material differs, and you must adapt to this style and learn legal terms. Another skill that you will be using frequently is doing research to look for related patents on intellectual property databases. **Your ability to search for information, acquired as a PhD candidate, will be a key transferable skill for this role.** As laws are regularly updated by the USPTO, another essential aspect of this role is to constantly keep up with revisions of existing laws or additions of new ones. The analytical skills and writing skills that you acquired during graduate research is directly applicable to this field. As your daily task will involve drafting patents for novel inventions **you will be constantly exposed to cutting-edge technology and learn about a broad range of new inventions in a fairly short amount of time.** Working in an intellectual property law firm gives you the opportunity to work with a wide range of people involved in the life science industry, so this allows you to build a network which will prove to be valuable for your career progression in the future.

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# SCIENTIFIC/TECHNICAL WRITER

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“THE WRITING SKILLS THAT YOU DEVELOPED WHILE WRITING RESEARCH PUBLICATIONS AND DISSERTATION CAN BE UTILIZED BY A VARIETY OF ORGANIZATIONS.”

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One of the most common concerns expressed by science PhDs who wish to transition out of academia is that they do not have adequate transferable skills. However, in graduate school one does a lot of writing. Lab reports, scientific articles, assignments for graduate courses and above all, your dissertation. **You will be glad to know these writing skills can be put to good use in multiple roles available outside academia.** A wide variety of organizations, ranging from tech industry to market research firms, require the services of professionals who have the combination of scientific knowledge and writing skills that science PhDs have already acquired.

Every major technology-based organization needs people who are good at writing scientific material for a variety of purposes, such as communicating with investors, providing information to the general public, writing instruction manuals, advertising the products, and also

for maintaining a social media presence. If you are the kind of person who really enjoys researching information and writing about it, this may be the ideal career for you.

Another positive aspect of this profession is that the demand for scientific writers is not limited to a narrow range of industries. **The writing skills that you developed while writing research publications and your dissertation can be utilized by a variety of organizations.** There is high demand for these abilities in technology-based industries such as IT, pharmaceuticals, and biotech. There are also employment opportunities in other organizations which specialize in medical writing or technical writing for a specific sector. Even market research companies require writers for their reports.

Another aspect of scientific writing that makes it suited to science PhDs is that prior to creating a report or writing a technical document **you will be required to do a large amount of research and information gathering, and then selecting the appropriate details and facts suitable for your article.** These are skills you have already developed as a PhD or a Postdoc. **It is necessary for a scientific or technical writer to remain aware of all the most recent developments in his or her field.** So even though you are not directly involved in research, as technical writer you will get to know all the current technological breakthroughs. Unlike working as a PhD, in this position you will be writing about a wide range of scientific topics so you will be exposed to large variety of knowledge.

**For those of you who would wish to stay more closely associated with academia, writing and editing for scientific journals or writing news articles related to science and technology are other options that might be more to your liking.** If you do not wish to travel, this role will be comfortable as writers rarely need to travel. Some even work independently from a home office. This career will be suitable for those science PhDs who prefer to work alone rather than in a large team.



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# RESEARCH SCIENTIST IN INDUSTRY

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**“UNLIKE ACADEMIA, SCIENTISTS IN INDUSTRY NEED NOT WRITE GRANT APPLICATIONS AND SUFFER FOR LACK OF FINANCIAL SUPPORT.”**

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**T**his is undoubtedly the most popular option among all science PhDs who wish to pursue a career option other than the traditional academic path. Because the responsibilities of a research scientist in industry are around conducting research and making new discoveries, this is very attractive to science PhDs. Almost every innovation-based industrial sector can offer this opportunity to science PhDs.

**However, despite its appeal, the number of science PhDs who seek a research position in industry right after their PhD is surprisingly small. One of the major reasons is the reluctance of science PhDs to step out of their comfort zone.** They are sometimes further discouraged by PhD advisors who may feel that choosing any path other than a traditional postdoc is somehow unsatisfactory, or not to be recommended. Also, lack of knowledge about the particular industry and network outside academia among science PhDs may mean they are unaware of these opportunities.

On the surface it might appear that doing research, whether in industry or in a research institute, is the same. However, although there are many similarities to academic research, there are also some key differences in conducting research for industry. The most important one is that in research in industry, research is driven by a more singular goal — whether that be of finding a cure for a specific disease, or developing a new advanced electronic product. In comparison, academic research is more exploratory.

There are a few more things to keep in mind when considering an industry research position. In addition to scientific research expertise, a few other skills are also sought in industry. **Interpersonal skills, the ability to work as a part of a larger team, and to follow a stricter standard for data documentation are also necessary for success in industry as a scientist.**

Unlike other careers in industry, one obvious advantage for a science PhD is that you need not worry about a lack of transferable skills. Doing research, using your analytical skills and making new discoveries is what you have been trained to do. As a PhD you have received the most specialized and rigorous training possible for the specific area of your field. **Unlike several other alternative career paths (e.g. CI Analyst or Technical Sales Specialist) you have the advantage over someone without a science PhD.**

Another negative aspect associated with industrial scientific research is the lack of opportunity to publish research articles or present in scientific conferences. This was a major concern previously but now **many innovation-based companies have been showing an increased interest in basic research. They often encourage their scientists to publish and attend scientific conferences to present their data.**

A few things that make an industry research position a superior option compared to an academic research career is that once you have transitioned to industry you will not be faced with the uncertainty of securing tenure. Research projects in industry are financially supported

by the R&D budget of the company, therefore, **unlike academia, scientists in industry need not write grant applications and suffer for lack of financial support.**

Most importantly, your work will not be solely esoteric like the large majority of academic research. Your work will have a tangible, positive influence on society through the implementation of innovations that solve problems in daily life, or contribute in finding needed therapies. For those of you involved in life science, a position as a research scientist in industry offers one of the fastest growing career opportunities. According to statistics published by the Department of Labor in its 2012-2013 edition of "Occupational Outlook Handbook" the **healthcare/medical industry is projected to grow at a rate much faster than the national average, and research scientists involved in this sector will experience a 36% job growth rate between 2013 and 2020.**

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# TECHNOLOGY ASSESSMENT AND ALLIANCE MANAGER

*This position is also known as **Technology Assessment and Alliance Officer***

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“YOU WILL BE BRIDGING THE CORPORATE  
WORLD WITH ACADEMIA AND PLAYING A KEY  
ROLE IN THE SUCCESS OF BOTH.”

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**W**ith more and more academic research institutes becoming interested in translational research, and private companies putting more value on novel innovation, there has been an increasing trend of academia-industry partnerships. This is beneficial for both the parties, and most importantly the overall growth of any technology-based sector. With funding from traditional sources becoming scarce, funding from industry has proven to be a more reliable source of financial support for academic researchers. In return, industries get access to top quality, cutting edge innovation resulting from research in academia. **In order to make this partnership successful, industries require professionals with strong scientific academic backgrounds who can also work as a bridge between industry and academia. This unique and relatively new role is the responsibility of a Technology Assessment and Alliance Manager.**

It is evident from the title that the key responsibilities of this position are to **assess new technologies and facilitate academia/industry collaboration leading to the commercialization of new inventions.** In order to do so a technology assessment manager must have an excellent understanding of the scientific area he is dealing with and be able to identify and prioritize technologies of interest. **In this position you will need to compare several research projects and predict which of those have potential for commercial success.**

Among all the career options for a science PhD **this is definitely one of the most collaborative and multifunctional roles.** Your responsibility is not limited to assessing technologies. Once you have identified the technology you will communicate with academic researchers and licensing managers in the technology transfer office in order to facilitate further collaboration. **You will be bridging the corporate world with academia and playing a key role towards success of both.** So, interpersonal skills and the ability to function well in a team environment are very important for this position.

In addition to people in academia such as researchers and licensing managers, you will be interacting with key opinion leaders — those managing funding for R&D in your company for the purpose of developing a balanced academic collaboration portfolio. You will also be required to collaborate with the legal team for the purpose of finalizing license agreements, material transfer, and confidential disclosure agreements.

The presentation skills you developed through delivering seminars during your PhD training will prove to be a great transferable skill as you will be presenting your assessments to the decision-makers of your company on a regular basis. **Besides scientific and intellectual property related knowledge, it is essential to develop skill in managing the financial aspects of projects, and over time, gain business development skills.** Your organization will be counting on you to suggest the ideal path for collaboration with different research teams depending on the nature and stage of development the invention is in. It might be a long-term sponsored research, or direct licensing, or in some cases, the formation of a spin-off as a sister company under your organization.

This role will offer you the opportunity to be exposed to a number of exciting projects and interact with many intelligent people from all over the world. Consequently, those who wish to pursue this role **should be prepared for traveling both domestically and internationally on a regular basis.** Performing professionally while interacting with people from culturally diverse environments will prove to be a valuable attribute for this role.

Owing to the collaborative nature of this position, you will be growing your network both in the scientific community as well as industry, very quickly. This can be a great profession for those who do not want to remain in traditional research at the bench but still want to be associated with academic research in some way. As a Technology Assessment and Alliance Manager you will be not completely detached from academia, but at the same time you will be developing valuable business skills which will prove to be very valuable for your long-term career growth.

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# RESEARCH PROJECT MANAGER

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“THE ANALYTICAL SKILLS AND ABILITY OF EVALUATING SCIENTIFIC DATA THAT YOU HAVE DEVELOPED AS A PHD WILL PROVE TO BE VALUABLE FOR THIS ROLE.”

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In any technology-based industry, continuous innovation and development of new products is one of the key ingredients for success. Therefore, a successful R&D program is essential for a company's future. Many have the impression that an R&D department is all about running experiments and discovering new innovations. In reality it is much more than that. **All the research going on in an R&D division needs to be managed properly in order to control expenditures, ensure the timely completion of projects, and achieve the required results. This is the responsibility of the R&D Project Manager (PM).** The many responsibilities associated with this position make it best suited to those who possess a deep understanding of technologies, and hence this is a great opportunity for science PhDs interested in pursuing a non-academic career.

**One of the main tasks of R&D management is to oversee the process and techniques used by the researchers to ensure financial support is**

**being utilized properly, and that the project being undertaken by the R&D team is in alignment with the long-term strategy of the organization.**

One of the initial tasks of a research PM is to understand the market needs and decide which new projects to initiate, as well as which of the existing projects should be given priority. For this, a research PM will meet with product managers and a market evaluation team to decide in which area there is substantial need as well as consumer interest.

**Once a project is started, a PM's main responsibilities include setting a timeline for completion of the project, and setting definite milestones for reaching the final goal on time.** The establishment of clearly defined milestones is essential. Another aspect where the PM needs to determine and set definite benchmarks is the budget. As R&D projects can be unpredictable, completion of project within the initially stipulated budget can be tricky. **To be an efficient research PM you will need to develop strong cost management skills.**

Project managers regularly collaborate with other divisions. You will need to work with the product development team to understand the life cycle management of new products and determine the project outline. The marketing team's help will be needed to understand consumer interest and market needs. Additionally, you will also have regular meetings with oversight committees and financial teams in order to keep them aware of the progress of your projects, and cost management. **Maintaining continuous communication with all these different divisions throughout the project is essential for the success of your project. Thus, it is essential to have excellent interpersonal skills.**

**The analytical skills and the ability to evaluate scientific data that you have developed as a PhD will prove to be valuable for this role.** Another transferable skill applicable in this role is the ability to multitask. All PhDs have experience in balancing multiple research projects, while taking graduate courses, writing research articles, and sometimes even teaching, all at the same time. **Similarly, from managing budgets, managing your team, evaluating scientific data, and maintaining communication and collaboration with other divisions, as a research PM you will be tasked**



**with a wide variety of duties.** Personnel management is one of the most important (but often overlooked) skills required for this position. You should ensure that team members are compatible, listen and facilitate problem solving, select the proper professionals for the various roles, and give them definite guidelines rather than vague instructions, so that confusion is avoided. Leadership skills will be critical.

**Any science PhD who is eager to pursue this role can increase her or his chances by acquiring project management certification or taking a few courses offered by the business school at her or his university.** A research PM has a lot of responsibilities and it can be a stressful position. However, it is a rewarding and fulfilling role, since a research PM plays a crucial role in the success of any innovation-based industry. Success in the role of a research PM is also the ideal gateway to some of the highest-level executive positions in the industry.

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# TECHNICAL SALES SPECIALIST

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“AS TEACHING SALESPEOPLE AND EXPLAINING TECHNOLOGY TO CLIENTS ARE ESSENTIAL DUTIES OF A TSS, YOU NEED TO HAVE TEACHING AND PRESENTATION SKILLS.”

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**T**here are several companies which manufacture and sell highly sophisticated equipment or lab materials. While traditional salespeople have knowledge of marketing, their lack of scientific knowledge limits their ability to understand – and thus properly explain – the value of these technologies to prospective clients. **Therefore, technology-based companies require people with advanced science degrees who can also function as part of their sales team. This specific niche is filled by a Technical Sales Specialist (TSS).**

**TSSs fulfill a unique role of bridging the gap between technical know-how and sales skills.** The exact role of a TSS might vary from one organization to another, but the main task is to use scientific knowledge to support the larger sales team and help the clients. **As a TSS you might be required to understand a client’s needs and suggest the equipment ideal for solving their specific need.**

Depending upon how an organization's sales division is structured, there are two distinct ways in which one might function as a TSS. **In one scenario a TSS initiates contact with prospective clients and acts as the primary point of contact.** They are tasked with assisting the customer to choose the right technical equipment, closing the sale, and placing an order. **In the second case, a TSS works in partnership with one or more people in traditional sales role.** These other sales professionals are responsible for business building and getting new clients. The TSS offers technical expertise to several different sales people on an as-needed basis and answers technology related questions from a number of different customers.

**Often a TSS who regularly helps a large company is appointed as an account manager in an ongoing capacity.** In this situation he is responsible for troubleshooting and answering customer's questions while continuing to make sales and suggest new products or technical upgrades for this one specific client. A lack of sales or business expertise may not be a problem. **As a large number of TSSs come from traditional scientific background without any prior sales experience, most technology-based companies offer a specialized certification course in sales and business.** This also ensures quality and wins trust of clients.

This role requires some traveling, but less than a traditional sales professional. **Mostly TSSs are required to go to major scientific conferences where the attendees visiting the stall of your company might ask scientific questions.** A TSS may also be called upon to visit a client's location to provide customization of products or help the customer upgrade to a newly-launched custom software program, product, or accessory.

The specific scientific degree required to become a TSS will vary depending on the skills and knowledge necessary to effectively sell the products of that company. The responsibilities of this position mean **that interpersonal skills are necessary in order to be successful as a TSS.** It is important to have confidence and be persuasive when

trying to convince a client to purchase a new product or add an accessory to existing equipment. The ability to troubleshoot problems in a limited amount of time is another highly valued skill for this role. **As teaching sales people and explaining technology to clients are essential duties of a TSS, you will need to have strong teaching and presentation skills.**

**This position can be the ideal platform for science PhDs to gain entry into the non R&D realm of the technology industry.** All the skill sets that you will be learning while working as a TSS are highly valued in the corporate world. These skills, combined with your scientific knowledge, will enable you to secure much higher positions later on in your career.

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# MEDICAL SCIENCE LIAISON

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“SINCE THE LATE 1980s THERE HAS BEEN A PUSH TOWARDS HIRING DOCTORAL DEGREE HOLDERS WITH RELEVANT SCIENTIFIC KNOWLEDGE FOR THIS POSITION.”

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**M**edical Science Liaison (MSL) is a rapidly growing opportunity for STEM PhDs. This is a highly specific position that can be found in various healthcare oriented sectors such as pharmaceutical, biotechnology, contract research organizations (CROs) and medical device organizations.

**The biggest misconception regarding MSLs is that it is a sales position. Actually MSLs are scientifically trained field personnel who are officially considered to be part of the medical staff.** They are not permitted to discuss drug prices or conduct sales when interacting with therapists or other medical professionals. They have much greater freedom, deeper knowledge of therapeutic areas of research and they discuss the scientific aspects of medicines and other products with physicians. One of their key responsibilities is to build rapport with Key Opinion Leaders (KOLs) in various therapeutic areas of research by utilizing their scientific knowledge.

The scientific and medical knowledge that you gain during PhD or postdoctoral training in a life science field will make you a great candidate for this position. It is also essential to be a “people-person”, and having excellent interpersonal skills, as interacting with new people and building rapport are crucial for being successful in this role. Other necessary attributes you will need are the ability to work independently, good written and verbal communication, and strong organizational skills. A PhD’s ability to teach and conduct scientific presentations will also prove to be valuable transferable skills for an MSL role. **This position requires a lot of travel, as face-to-face interactions are crucial for building a professional relationship with KOLs and important decision makers.** MSLs can travel up to 75% of their time, depending on the territory they are responsible for.

A few decades ago the first MSLs were selected from experienced sales representatives who had strong scientific backgrounds. However, since the late 1980s there has been a push towards hiring doctoral degree holders with relevant scientific knowledge for this position. **Currently PhDs with medical knowledge have a significant advantage in finding employment as an MSL. According to information from the Medical Science Liaison Society, 90% of current MSLs hold a PhD or MD degree.**

With growing interest in medical affairs, and increasing interaction between KOLs and the pharma industry, demand for MSLs is increasing. However, MSL positions are highly competitive and in some major organizations only 1-2% of applicants get hired as MSLs. So it is advisable that if you cannot find a MSL position in your first attempt, you can improve your chances by taking a clinical trials related position such as a Clinical Research Associate (CRA). A PhD combined with a few years of experience as a CRA is considered by some industry experts as the best possible preparation to successfully secure an MSL position.

You can find MSL employment opportunities in most of the major pharmaceutical, biotechnology, or medical device companies. Other healthcare-related organizations such as CROs also employ MSL

professionals. **In a report jointly done by Mckinsey and Company and Korn/Ferry International in 2013 on trends in medical affairs for 2020 and beyond, there will be increased value of medical roles such as MSLS owing to greater interaction between pharmaceutical companies and KOLs as well as other stakeholders.** This report also suggests that in the future, with an increased scrutiny of products and more stringent regulatory guidelines, there will be more focus on providing scientific evidence which will result in increased demand for professionals with strong scientific backgrounds such as science PhDs in MSL roles.

**The Medical Science Liaison Society recently reported that data from a latest survey conducted among top ten US pharmaceutical companies indicated that since 2005, hiring for the MSL role has grown by 76%, making it one of the fastest growing professions for life science degree holders.**

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# FDA REGULATORY AFFAIRS ADMINISTRATOR

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“REGULATORY PROFESSIONALS ARE AMONG THE LEAST AFFECTED BY JOB LOSSES IN THE MEDICAL SECTOR.”

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**W**ith the growing complexity and continuous evolution of regulatory laws, advanced science degree holders with detailed scientific knowledge are in increasing demand for regulatory roles. The main responsibility of an FDA Regulatory Affairs Administrator is to deal with FDA regulatory matters which mostly consist of documentation and filing of regulatory paperwork such as IND (Investigational New Drug) or NDA (New Drug Application) for the approval of clinical products by the FDA. Your main aim would be to connect the dots between research and development of a clinical product and its regulatory approval.

The documentation you will be responsible for will include details from how the drug was produced to statistical analysis of the results of clinical trials. **A detailed knowledge of the regulatory requirements and the drug development lifecycle is required to be successful in this role.** Being detail-oriented and skilled at time management are also



essential for this role, as accurate completion and timely submission of documentation for regulatory filings are its key responsibilities.

As a regulatory affairs administrator you will be working with a team of regulatory professionals. Often you will also be required to consult and work with other departments such as scientists from R&D, or those involved in clinical trials, to gather required information as a scientific background is beneficial in creating the best possible submission. The scientific knowledge possessed by science PhDs gives them an advantage over bachelor degree holders.

On a regular basis, new rules and regulations are added to the FDA's regulatory guidelines. Data from a report by George Mason University's Mercatus Center indicates that the number of regulatory requirements enforced by the FDA has increased by 15% between the years 2000 and 2012. Therefore, continuously educating yourself and remaining well-informed regarding changes in regulatory guidelines is essential for your continued success and growth in this role. A science PhD's habit of ongoing research and learning will prove to be a valuable transferable skill in this role.

Although ensuring regulatory filing is the main duty of this role, it is not the only responsibility. Some other functions might include ensuring the compliance of product labelling and promotional material. As all departments need to maintain regulatory standards, **providing regulatory advice so that the facilities of other departments – such as manufacturing or packaging – are compliant with regulatory guidelines is another key responsibility of this role. You might also be required to provide FDA rules-related training to marketing professionals,** so your presentation and teaching skills will prove to be useful in this role. Paying attention to detail and being well organized are other valuable skills for this role as you will be handling a great deal of documentation, both online and offline.

For the healthcare industry, securing the approval of drugs and medical devices is always a high priority because this approval is crucial to

commercializing products and generating revenue. Industry experts believe that the roles of **regulatory professionals are one of the least affected by job losses in the medical sector.** According to data from the U.S Bureau of Labor Statistics, between the years of 2008 and 2018, job growth for the medical affairs related professions are expected to increase more than any other sector, owing to an ageing population more prone to developing health problems.

**To access the next 20 positions, and  
for resume, networking and interview  
help, join the Cheeky Scientist  
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