

**MODÉLISATION DES FACTEURS DE RISQUES
MÉDICAUX ET BIOTECHNOLOGIQUES**

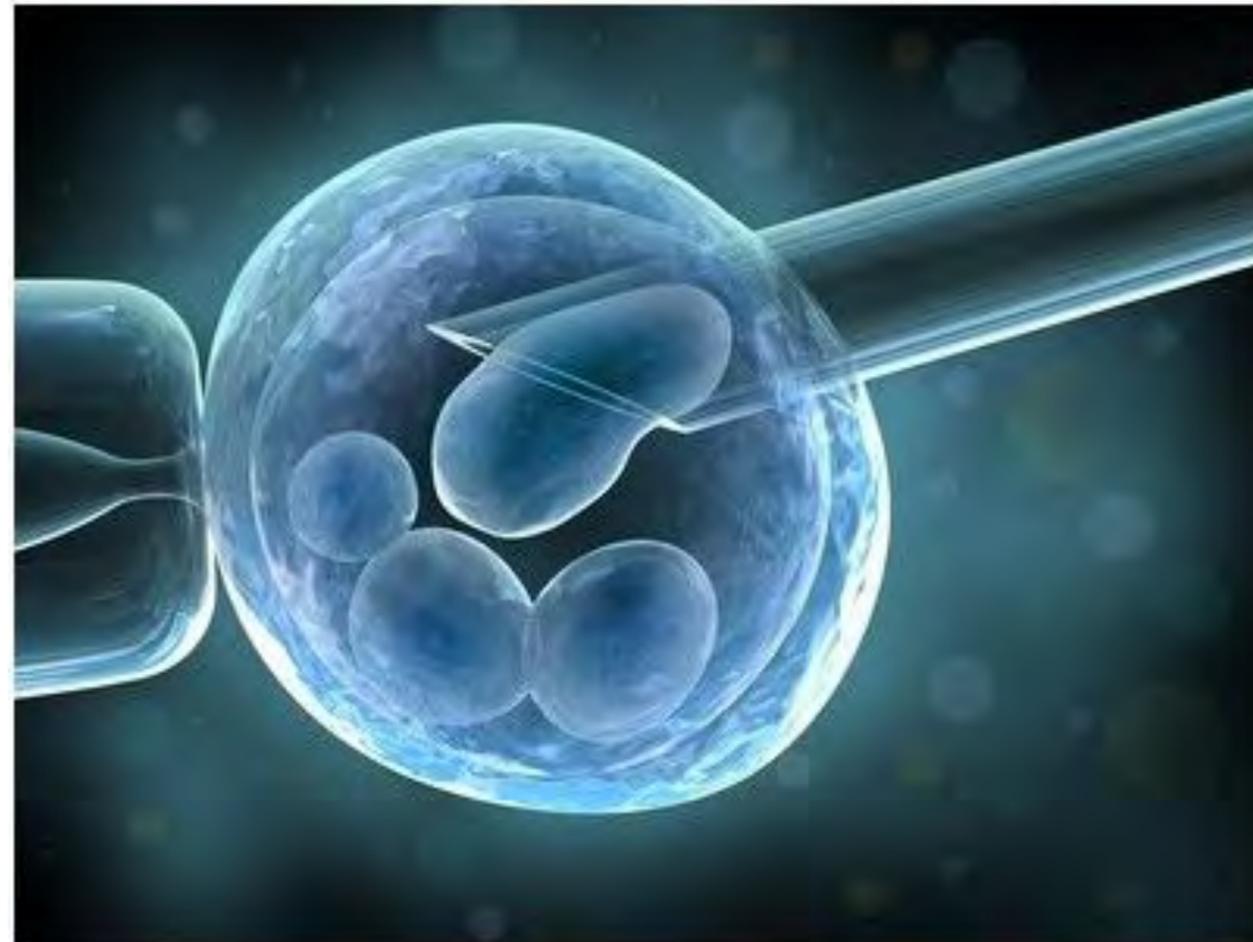
Thérapie cellulaire appliqué à l'oncologie

Aide à la décision des médecins - Éclairer les patients dans leur parcours de soin



Qu'est ce que la thérapie cellulaire en oncologie ?

« La thérapie cellulaire consiste à soigner les patients atteints d'un cancer à partir de leurs propres cellules. »



NOTRE PROBLÉMATIQUE

Comprendre l'évolution et l'impact
des médicaments innovants en
comparaison avec des
médicaments « traditionnels »



RECHERCHE BIBLIOGRAPHIQUE

Journal of Innovation & Knowledge xxx (2018) xxx–xxx

Journal of Innovation & Knowledge

<https://www.journals.elsevier.com/journal-of-innovation-and-knowledge>

Factors affecting innovation policy in biotechnology

Saeed Siyal^{a,*}, Qiang Wang^c, Yuzhen Duan^d

^a Science and Technology of China, Jinzhai Road, Hefei, Anhui, PR China
^b Beijing University of Chemical Technology, Beijing, PR China
^c Science and Technology of China, Jinzhai road Hefei, Anhui PR China
^d Science and Technology of China, Jinzhai road Hefei, Anhui PR China

ABSTRACT

Nearly three decades have passed since the new knowledge and technologies like genetics and biotechnology have emerged. By passing through various periods in which labor force, resources and capital, each one at a certain time, have been comparative and competitive advantages for a more powerful economy, biotechnology is one of the advanced technologies that countries are investing in, in order to achieve sustainable development in the current century. The capabilities of this knowledge are the creation of fundamental and gradual innovations, in addition to the several applications that generate wealth for countries. For this purpose, innovation policies in biotechnology have been addressed.

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jvial

ELSEVIER

POLICY PERSPECTIVES

Pharmaceutical Portfolio Management: Global Disease Burden and Corporate Performance Metrics

Rutger Daems, PhD, MBA, MSc¹, Edith Maes, PhD, MHSM^{2,*}, Maneesha Mehra, MSc³, Benjamin Carroll, PhD, Pharm³, Adrian Thomas, MD³

¹Planet Strategy Group, Luxembourg; ²Maastricht School of Management Maastricht, The Netherlands; ³Janssen Global Services, Raritan, NJ

ABSTRACT

Background: Biopharmaceutical companies face multiple external pressures. Shareholders demand a profitable company while governments, nongovernmental third parties, and the public at large expect a commitment to improving health in developed and, in particular, emerging economies. Current industry commercial models are inadequate for assessing opportunities in emerging economies where disease and market data are highly limited. **Objective:** The purpose of this article was to define a conceptual framework and build an analytic decision-making tool to assess and enhance a company's global portfolio while balancing its business needs with broader social expectations. **Methods:** Through a case-study methodology, we explore the relationship between business and social parameters associated with pharmaceutical innovation in three distinct disease

Introduction

Medicines prevent and treat diseases, enabling people to live longer, healthier, and more productive lives, and consequently contribute significantly to social and economic advances. Research-based biopharmaceutical companies remain the prime innovators of drugs, vaccines, and diagnostics to help countries and regions improve the health of both their people and their economies.

Companies recognize that market demand and market need are not the same thing. In a 2004 study, Acemoglu and Linn [1] reported a direct link between a market's size and the level of innovation within the biopharmaceutical industry's products in that market. A perfect example of this connection is neglected tropical diseases. There is an unmet need within developing markets for medical solutions to neglected tropical diseases but

areas. The global burden of disease-based theoretical framework using disability-adjusted life-years provides an overview of the burden associated with particular diseases. The social return on investment is expressed as disability-adjusted life-years averted as a result of the particular pharmaceutical innovation. Simultaneously, the business return on investment captures the research and development costs and projects revenues in terms of a profitability index. **Conclusions:** The proposed framework can assist companies in identifying the medical needs of populations around the world. **Keywords:** burden of disease, pharmaceutical innovation, portfolio management, profitability index. Copyright © 2014, International Society for Outcomes Research (ISPOR). Published by Elsevier.

benefit business. Strategic sustained investment development (R&D) are critical to ensure limited market data for emerging markets ability to assess opportunities across the globe. The use of gauge performance in business is specifically the Access to Medicines Index Productive Innovation Index [3]—operate through the ATMI measures the pharmaceutical better enabling access to medicines. The analytical framework to consistently capture any data across seven technical areas of access to medicine management, public influence, R&D, pricing manufacturing and licensing, capability advancement, and within each area, the index assesses for



Racing to define pharmaceutical R&D external innovation models

Liangu Wang¹, Andrew Plump² and Michael Ringel³

¹ Merck Research Laboratories, 2015 Gallows Hill Road, Kenilworth, NJ 07033, USA
² Sanofi, 54, Rue de la Boétie, Paris 75008, France
³ The Boston Consulting Group, Exchange Place, Boston, MA 02109, USA

The pharmaceutical industry continues to face fundamental challenges and development (R&D) productivity and rising customer expectations beyond me-too therapies, and create more transformative port actively capitalizing on external innovation through precom cultivation of biotech start-ups, and proactive licensing and ac innovation strategies used by pharmaceutical companies, com identify the trends in external innovation. We also discuss fac innovation models and propose a preliminary set of metrics th success.

Introduction

The pharmaceutical industry has been facing decreasing R&D productivity for over several decades driven by many factors, including low success rates in clinical development [1,2]. The return on R&D investment in biopharmaceutical companies has arguably dropped at or below the cost of capital [3]. To address this decline, identify better-understood targets, and develop differentiated therapies, many pharmaceutical companies are designing creative approaches to access external scientific innovation [4–6]. What are these models? Which will bear fruit? And, perhaps most importantly, how will we know that they are any more productive than the approaches used to date?

The external R&D innovation models used by the pharmaceutical industry are in many ways different from those used by other industries.

are in many ways different from those used by other industries. The pharmaceutical industry has been facing decreasing R&D productivity for over several decades driven by many factors, including low success rates in clinical development [1,2]. The return on R&D investment in biopharmaceutical companies has arguably dropped at or below the cost of capital [3]. To address this decline, identify better-understood targets, and develop differentiated therapies, many pharmaceutical companies are designing creative approaches to access external scientific innovation [4–6]. What are these models? Which will bear fruit? And, perhaps most importantly, how will we know that they are any more productive than the approaches used to date?

are in many ways different from those used by other industries. The pharmaceutical industry has been facing decreasing R&D productivity for over several decades driven by many factors, including low success rates in clinical development [1,2]. The return on R&D investment in biopharmaceutical companies has arguably dropped at or below the cost of capital [3]. To address this decline, identify better-understood targets, and develop differentiated therapies, many pharmaceutical companies are designing creative approaches to access external scientific innovation [4–6]. What are these models? Which will bear fruit? And, perhaps most importantly, how will we know that they are any more productive than the approaches used to date?



Drug Discovery Today • Volume 23, Number 2 • February 2018



feature

Guiding principles of value creation through collaborative innovation in pharmaceutical research

Liang Schweizer, lischweizer@hibio.com and Jeff He

Innovation has become the main trend in pharmaceutical research. Potential obstacles and pitfalls often lead to missed opportunities and/or poorly executed partnerships. This paper provides a framework that facilitates the execution of successful collaborations. We start by going out three checkpoints onto early-stage collaborative partnerships: inception, ignition and entention. Different value types and value drivers are then laid out for each phase of the partnership. We proceed to propose a ratio-driven approach and a value-adjustment mechanism, and the probability of success in pharmaceutical research collaborations. These guiding principles combined should help the partners either reach agreement more quickly or move on to the next project.

The pharmaceutical industry continues to face the problem of R&D efficiency. R&D is rising even as output [2,3] of new entities has remained relatively flat. Consequently, the pharmaceutical industry has continued to deepen its commitment to collaborative approaches to open innovation [6]. Models of true pre-competitive consortia re-structured arrangements [9,10]. Address intellectual property (IP) issues. Here, we address the latter group, fo-

an agreement on the values of ideas, methods and prototypes in the drug discovery process. Sometimes, a lack of clarity on key short-to-mid-term metrics or key performance indicators [11] can exacerbate the problem. Finally, disagreement can arise regarding the status of potential therapeutic molecules — one company's hit is often another company's preclinical candidate. Herein, we seek to provide a framework to ease the launch of nascent collaborations, with the goal of reducing the number of missed opportunities for open innovation in pharmaceutical research.

describe a classic example that typifies the challenges and opportunities facing such collaborations. Company X specializes in antibody hit generation, whereas Company Y bases its business model on proprietary rapid screening technologies for hit identification and lead generation. The initial connection between the parties is made through an industry veteran, and a mutual respect quickly develops. Both teams recognize the crucial need for rapid generation of differentiated leads against novel biological targets

Contents lists available at ScienceDirect

Journal of Business Research

Journal homepage: www.elsevier.com/locate/jbusres

R&D innovation indicator and its effects on the market. An empirical assessment from a financial perspective

Daniela Coluccia^a, Marina Dabić^{b,c}, Manlio Del Giudice^{d,e}, Stefano Fontana^{a,f,g}, Silvia Solimene^h

^a Department of Business and Law, University of Rome, La Sapienza, Via Cueto Lucreziana 9, 00161 Rome, Italy
^b Faculty of Economics and Business, University of Zagreb, Ilica J. F. Kennedy Square, 10000 Zagreb, Croatia
^c Nottingham Trent University, Department of Management, Burton Street, NG2 4RU Nottingham
^d University of Rome "La Sapienza", Rome, Via dei Condotti 3, P.O. Box 1, 00185 Rome, Italy
^e Paris School of Business - Rue Nationale, Paris, France
^f Department of Business and Law, University of Rome, La Sapienza, Via Cueto Lucreziana 9, 00161 Rome, Italy

ARTICLE INFO

Keywords:
Innovation elasticity
Market value
Default risk
Disclosure
Stakeholder

ABSTRACT

We propose an alternative firm-level measure for innovation activities—R&D elasticity—and we analyse its effects on the Tobin's Q of listed companies on the European 100 index. We find that R&D elasticity is positively related to market appreciation by stakeholder investors. Moreover, we analyse the risk of default risk in the relationship between innovation activities and market value, and find that firms' default probabilities are negatively related to Tobin's Q. These findings are supported by OLS regressions, wherein Tobin's Q is regressed on R&D elasticity, five-year default probability, and controls such as ESG voluntary disclosure. These results further the research aimed at developing a conceptual framework for integrating a policy level the R&D elasticity indicator as a type of innovation disclosure among the non-financial disclosures released by companies.

1. Introduction

Firms vary in how rapidly they undertake innovation processes and communicate them to their stakeholders' plethora (Verriego, Kacker, Bass, & Chign, 2017). Advances in open innovation processes flow from substantial changes that have occurred in the operating environment.

It is widely accepted that technology and technological advances are a key component of innovation and economic growth (Grossman & Helpman, 1994). Organizations want to access, develop, absorb, or commercialize new technologies; thus, the pace of technological change has increased dramatically. Organizational knowledge and the role of knowledge workers have acquired increasing importance (Savina, 2009), and the diffusion of knowledge has become the key resource in post-industrial societies (Bell, 1973). Due to the speed and intensity of change, more information is needed, and this information must be acquired at a progressively faster pace. In addition, amid the dramatic changes in operating environments, periods of market equilibrium are becoming shorter. In the absence of lengthy periods of market stability, it is becoming increasingly difficult to maintain traditional fixed positions of competitive advantage (D'Aveni, 1994). Traditionally, investment in R&D has been regarded as a key

strategy for achieving high technological potential and thus innovation and economic growth (Tushman, 1990). However, it is becoming difficult to hold on to an advantage long enough to pay the costs of significant internal R&D investment or for those processes to generate innovations at the speed required by markets. Since strategies must be constantly revisited and reformulated, an exclusive reliance on internal R&D and closed innovation processes no longer makes strategic sense (Götzler & Lindemann, 2013). Under the assumption that R&D is fundamental for innovation, several considerations ensue.

First, traditional firm-level accounting metrics no longer fully represent the shareholder value perceived by investors. Since value creation is hard to measure, new indicators are needed to define which drivers lead to efficient financial performance in a multi-stakeholder collaboration environment (Reijnen, Lievens, & Blažević, 2016).

Second, since we know that innovation, generated through R&D expenditure, is one of the most important elements of firms' competitive advantage, innovation research should also reconsider organizational processes in order to explore the management practices, processes, structures, and tools (known collectively as 'innovation management', or IM) used by firms to generate and communicate new ideas and make them successful in the market.

* Corresponding author.
E-mail addresses: daniela.coluccia@uniroma1.it (D. Coluccia), m.dabic@efzg.hr (M. Dabić), m.delgiudice@unilink.it (M. Del Giudice), stefano.fontana@uniroma1.it (S. Fontana), silvia.solimene@uniroma1.it (S. Solimene).

<https://doi.org/10.1016/j.jbusres.2019.04.015>
Received 27 April 2018; Received in revised form 10 April 2019; Accepted 11 April 2019
0148-2963/© 2019 Elsevier Inc. All rights reserved.

Please cite this article as: Coluccia, Daniela, et al., Journal of Business Research, <https://doi.org/10.1016/j.jbusres.2019.04.015>

Frankfurt Institute for Systems and Innovation Research, Senlauer Str. 46, 76131 Karlsruhe, Germany

ARTICLE INFO

Keywords:
Innovation indicators
Bioeconomy
Sustainability
Patents
Innovation

ABSTRACT

Innovations in the Bioeconomy are expected to provide challenges like resource depletion, food insecurity or activities in the Bioeconomy and its outcomes is scatter policy making to assess its impact and whether objective needs and data availability for innovation indicators are presented and discussed for the Bioeconomy Germany for publications and patents. However, the limitations in information availability about the out-critical information gap in exist. In order to improve t survey for the bioeconomy would be needed.

1. Introduction

The bioeconomy is expected to provide solutions to major economic, societal and ecological challenges like resource depletion, food insecurity or climate change. It is expected that new applications are developed and existing markets will be transformed. Hence, the bioeconomy may have significant impact on value added, employment, distribution of profits and sustainability. To achieve these goals, several developments such as appropriate political framework conditions or better addressing of societal concerns are needed. Moreover, significant progress in the production and use of biogenic resources needed and further innovation is necessary. Life and biological sciences and technologies are required to provide superior performance of bio-based processes, products and services, ensure their sustainability and to improve cost-competitiveness. Indeed, there is a high innovation potential in the bioeconomy ranging from the usage of mostly untapped feedstock (CO₂, waste, algae), optimized microorganisms, digitalization in farming, social innovations (urban gardening, collective agriculture, etc.) [1,2]. Bio-based innovations are not only relevant in high-tech sectors, but also in traditional segments, such as the provision of new materials in textiles (e.g. spider silk) or developing new protein alternatives in the food sectors. Many strategies emphasize the need for new

with significant add the bio-economy at these innovation at. In the last year economic contributors have provided a more comprehensive overview of the bio-based share assess the sustainability. Those contributors development of the dynamic and detail measure the innovation. A proper and be and its outcomes is political decisions, of policies of effort identify certain so missing innovation the monitoring of it is important to kn



Measuring the knowledge translation and convergence in pharmaceutical innovation by funding-science-technology-innovation linkages analysis

Jian Du^a, Peixin Li, Qianying Guo, Xiaoli Tang

Institute of Medical Information & Library, Chinese Academy of Medical Sciences, Beijing, 10000

ARTICLE INFO

Article history:
Received 13 May 2018
Received in revised form 14 November 2018
Accepted 10 December 2018
Available online 28 December 2018

Keywords:
Translational research
Scientometric analysis
Science policy
FOA Orange book
Non-system literature

ABSTRACT

We propose a backward tracking translational research spectrum. 1. ages, we try to figure out the fundir and ponder some policy implications. A balanced basic research and application because it is a complete chain t to clinical practice. In order to ach focusing on only technology, conv suggested.
© 2018 The Authors. Published by BY-NC-ND license

1. Introduction

Biomedical innovation is the process of transforming scientific discoveries that improve and save patients' lives, which is a typical process of trans biomedical research is accelerating; however, translation of this knowledge

* Corresponding author.
E-mail address: dujian@imil.cma.ac.cn (J. Du).

<https://doi.org/10.1016/j.jbusres.2019.12.004>
1751-1577/© 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND 4.0 International license.

Exploring the future of the bioeconomy: An expert-based scoping study aiming key enabling technology fields with potential to foster the transition toward a bio-based economy

Talía Laibach^{a,*}, Jan Börner^{b,c}, Stefanie Bröring^d

^a Center for Development Research, University of Bonn, Geschichtswissenschaften 3, 53113 Bonn, Germany
^b Institute for Development Research in Agriscience, Institute for Food and Resource Economics, University of Bonn, Meckenheimer Allee 174, 53115 Bonn, Germany
^c Institute of Sustainable Land Use and Bioeconomy, Institute for Food and Resource Economics, University of Bonn, Meckenheimer Allee 174, 53115 Bonn, Germany

ARTICLE INFO

Keywords:
Bioeconomy

ABSTRACT

As new technologies based on renewable raw materials and biological principles are becoming available, bioeconomic transformation could help to achieve the United Nations' Sustainable Development Goals (SDGs). However, bioeconomic transformation is not necessarily sustainable. To design effective enabling and regulatory governance frameworks for bio-based transformation, policy makers have to identify potentially game-changing future technologies and assess associated sustainability gains and risks. Drawing on the concept of key enabling technologies (KETs) put forward by the European Commission (EC) in 2009, this paper defines KETs for the bioeconomy. Based on an international expert survey, we identified KET criteria for bioeconomic transformation and developed overarching usage-categories describing technology pathways and criteria dimensions according to the existing society–environment–economy triangle. In this way, this study contributes not only in providing advice allowing new technologies to foster but also in elucidating relationships between the regional origin and the perceived future of bio-based technology development. Moreover, bioeconomy KET visions from different stakeholders have been analyzed, thus providing a basis for future technology research, evaluation, politics, and management.

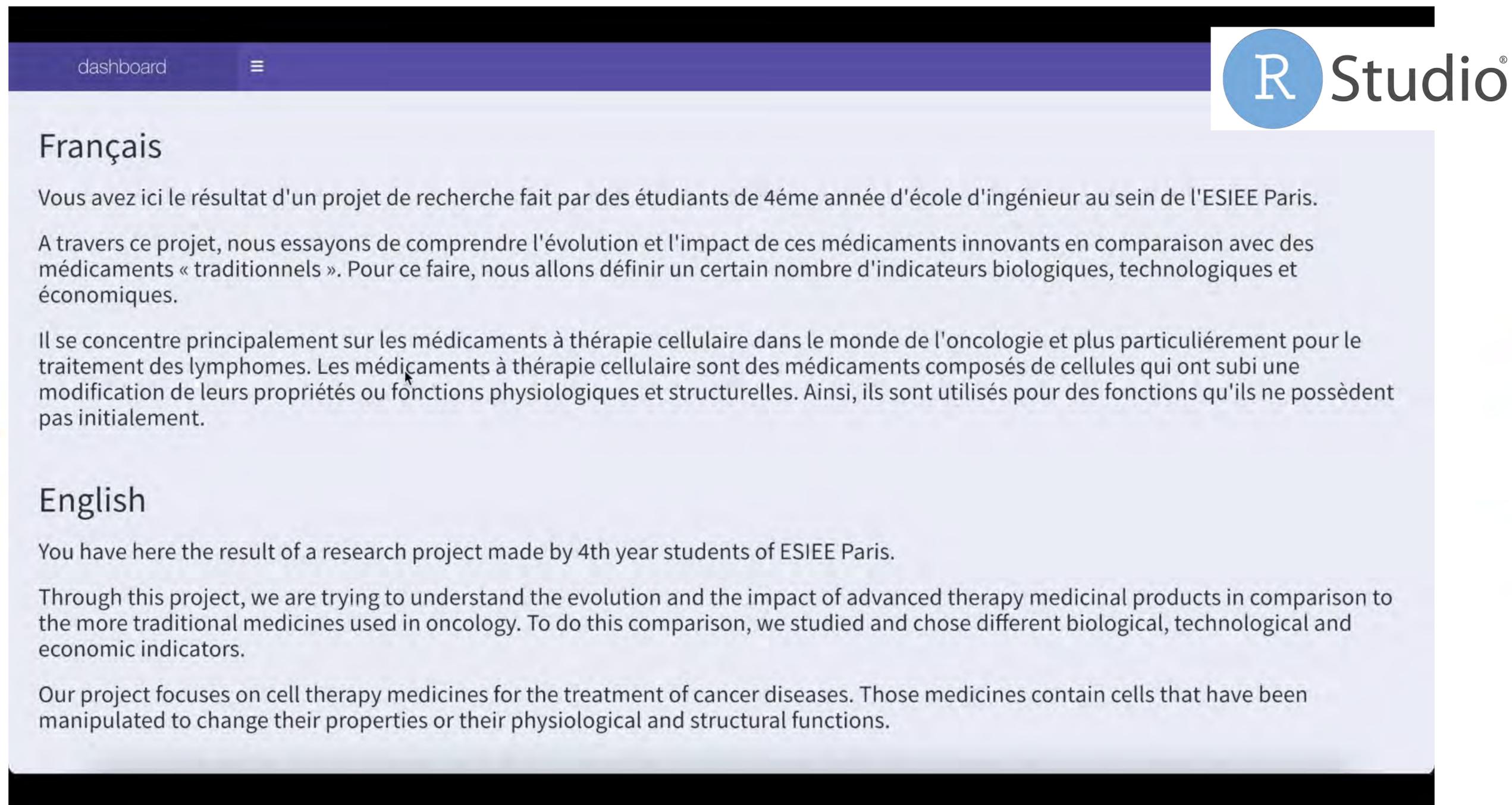
arcity, climate change and a and resource-efficient strategies of future generations. To meet all agendas such as the green economy is described as a beneficial yet environmentally concept is the bioeconomy: It re involved in the production, stores (plants, animals, micro- and feed) the provision of bio-based chemicals and materials, many could contribute to the nt Goals (SDGs), which address ity, innovation, sustainable consumption, peace, and justice, among other priorities [4,5]. However, literature about the bioeconomy concept addresses social issues scarcely [2]. Bioeconomic transformation may also trigger conflicts with some of the SDGs, for example the competition between food and bioenergy or biomaterial production causing indirect land use change or deforestation [6–8]. Biodiversity loss, eutrophication, invasive species, and high water demand as well as social costs (e.g. higher food prices) are further potential constraints [7,9–11].

In addition to political frameworks needed to govern bioeconomic transformation processes, technological innovation is considered a key driver toward a sustainable transition to a bio-based economy [12–14]. Technological development is viewed as a driver to create a sustainable future and a technology could, if accordingly implemented, support the value of sustainability and pave the way toward a good society [15,16]. Our understanding of technology is derived from an intermediate perspective between a neutral and deterministic philosophy, meaning that

© 2018 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND 4.0 International license.

© 2018 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND 4.0 International license.

LE DASHBOARD



dashboard

R Studio®

Français

Vous avez ici le résultat d'un projet de recherche fait par des étudiants de 4^{ème} année d'école d'ingénieur au sein de l'ESIEE Paris.

A travers ce projet, nous essayons de comprendre l'évolution et l'impact de ces médicaments innovants en comparaison avec des médicaments « traditionnels ». Pour ce faire, nous allons définir un certain nombre d'indicateurs biologiques, technologiques et économiques.

Il se concentre principalement sur les médicaments à thérapie cellulaire dans le monde de l'oncologie et plus particulièrement pour le traitement des lymphomes. Les médicaments à thérapie cellulaire sont des médicaments composés de cellules qui ont subi une modification de leurs propriétés ou fonctions physiologiques et structurelles. Ainsi, ils sont utilisés pour des fonctions qu'ils ne possèdent pas initialement.

English

You have here the result of a research project made by 4th year students of ESIEE Paris.

Through this project, we are trying to understand the evolution and the impact of advanced therapy medicinal products in comparison to the more traditional medicines used in oncology. To do this comparison, we studied and chose different biological, technological and economic indicators.

Our project focuses on cell therapy medicines for the treatment of cancer diseases. Those medicines contain cells that have been manipulated to change their properties or their physiological and structural functions.



MERCI DE VOTRE ATTENTION



Cassandra
Fournot

Uthamy
Thanabalasingam

Yassine
Rahali

Virginia
Soupramaniane

Morgane
Besnier