Symposium Friday 20 April 2018

Pharmacology forever!

Followed by the valedictory oration of Prof. dr. Frits Peters

Auditorium O12 gebouw
De Boelelaan 1108, Amsterdam
Role of pharmacology in anticancer treatment

Elisa Giovannetti
... from the Greek word *pharmakon* (a drug or a poison) and logos (science): the science that deals with drugs.
Oncology & Pharmacology numbers

- 2x Pharma market growth 2012-18 (8%)
- 60% external innovation
- 1.5x higher launch value than other TAs
- 25% of Pharma market in 2020
- 30% of industry pipeline
- >2,000 compounds in (pre-)clinical development
- 1 death every 4 seconds
- 500 molecular targets in the clinic
- 46% first-in-class pipeline compounds
- $150bn in health care cost
- 100 drug launches in last 10 years
5-years Survival Rates improvements in the last 40 years

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Seizing an opportunity

2016 FDA-approved pharmacogenomics biomarker in drug labeling

Your genome sequence contains 3 billion DNA pairs that add up to one unique you.

Scientists can use the human genome to develop new ways to treat, cure, or prevent thousands of diseases.

Precision medicine is health care tailored even more uniquely to you.
Key advances in the history of cancer chemotherapy

Advances in drug screening
Events with national impact
Advances in cancer therapeutics

Cancer Chemotherapy National Service Center
L1210 as primary screen (27–30)

- Nitrogen mustard in lymphomas (15–18) 1935
- Model development (7) 1935
- Antifolates (22) 1948
- Antitumor antibiotics (23) 1959
- 5-Fluorouracil (26) 1957
- Methotrexate in choriocarcinoma 1960s

AACR Centennial Series

Special Virus Cancer Program 1964
Cure of ALL & Hodgkin’s disease (51–56, 63–66) 1963–70
Vinca alkaloids (50) 1963
Xenografts in nude mice 1975
Adjuvant chemotherapy (79–83) 1968–75
Cure of testicular cancer (86–88) 1976

First monoclonal antibody approved 1997
Imatinib (Gleevec) (95–98) 1996
Cancer mortality begins to decline 1990
Tyrosine kinase inhibitors (94–101) 2005
Target specific screens 2007
Mortality decline accelerates 2007

NCI investment in molecular biology 1984
Genome sequenced 2001
Molecular profiling 2002

Source: Cancer Research
The future of pharmacology

‘Prediction is very difficult especially about the future’ Niels Bohr

- New compounds
- Personalized medicine
- New Technologies
- Academic & Pharma international collaborations
- Appropriate Preclinical studies/models
- Biomarkers
- Liquid Biopsies
The next wave of hallmarks of cancer technology/treatments

Worldwide Oncology Drug market (US Billions)
Back to the future...

Academic & Pharma international collaborations

Appropriate Preclinical studies/models

Biomarkers Liquid Biopsies

New compounds

Personalized medicine

New Technologies
Academic & Pharma interna1ons

Appropriate Preclinical studies/models

Personalized medicine

Back to the future…

New compounds

EORTC-related new drug discovery and development activities: role of the Pharmacology and Molecular Mechanisms Group

G.J. Peters*a, E. Chatelutb, A.K. Larsenc, N. Zaffaronid, on behalf of PAMM

Analysis of Drug Interactions

Irene V. Bijnsdorp, Elisa Giovannetti, and Godefridus J. Peters

New Technologies

On the use of pharmacogenetics in cancer treatment and clinical trials

Jacques Robert*a, Valérie Le Morvanb, Elisa Giovannetti, Godefridus J. Peters, on behalf of the PAMM Group of EORTC

Gemcitabine
Pemetrexed
Gefitinib
S-1, TAS-102

Preclinical studies/models
“I am influenced by my teacher and I am proud about this. He is too. Otherwise what is the meaning of teaching? The teacher gives to the student all he knows, believes, loves, hopes. The student adds other things and in this way humanity is going forward.”

(Lettera ad una Professoressa)