Vorprogramm
Preliminary Programme

MÜNCHEN
5.–8.5.1992

Biochemische ANALYTIK 92

SYMPOSIUM 4

Molecular Biology and Biological Functions of Growth Factors

Mittwoch/Wednesday, 6. 5., 9.00–13.00, Konferenzsaal K1

Chairman: P. C. **Heinrich** (Aachen/D)

In addition to the long- and well-known recognized group of circulating proteins known as hormones, there exists a large group of polypeptide mediators that are released from one type of cells and exert their effects on a variety of other cells. Growth factors represent one class of such polypeptide signalling substances affecting the proliferation and differentiation of specific types of animal cells. More recently, a family of polypeptides, the so called interleukins and colony stimulating factors have to be added to the catalogue of growth and differentiation factors.

Growth factors exert their action via specific surface receptors. Thus far, most receptors for growth factors such as epidermal growth factor, platelet-derived growth factor, insulin and fibroblast growth factor have been demonstrated to be ligand-regulated tyrosine-specific protein kinases. The tyrosine protein kinase activities are now recognized to be important for the transduction of mitogenic signals.

During the last few years a large number of cytokine receptors has been cloned. Molecular characterization revealed the existence of a new receptor superfamily. Two common motifs are characteristic for these cytokine receptors: A set of 4 conserved cysteines in the N-terminal half of the molecule, and a segment of tryptophan-serine residues (WSXWS) located proximal to the transmembrane domain of the receptor. Based on these structural properties, the superfamily comprises the receptors for IL-2 (β-chain), IL-3, IL-4, IL-5, IL-6 (both identified subunits), LIF, IL-7, G-CSF, GM-CSF (both identified subunits) and Epo.

Experts in the field of growth factors, interleukins and their respective receptors will review this fascinating area of research.

Molekularbiologie und biologische Funktionen der Wachstumsfaktoren

Neben den seit langem wohlbekannten, zirkulierenden Proteo-Hormonen gibt es eine große Gruppe von Polypeptid-Mediatoren, die von einem Zelltyp freigesetzt werden und auf eine Vielzahl anderer Zellen wirken. Wachstumsfaktoren stellen eine Klasse solcher Polypeptide dar, die als Signalsubstanzen auf Proliferation und Differenzierung spezifischer eukaryotischer Zellen wirken. In letzter Zeit ist eine Polypeptid-Familie, die sogenannten Interleukine und Kolonie-stimulierenden Faktoren, zum Katalog der Wachstums- und Differenzierungsfaktoren hinzugekommen.

Wachstumsfaktoren entfalten ihre Wirkung über spezifische Oberflächenrezeptoren. Die meisten Rezeptoren für Wachstumsfaktoren wie EGF, PDGF, Insulin und FGF konnten als Liganden-regulierte Tyrosin-spezifische Proteinkinasen identifiziert werden. Die Tyrosin-Proteinkinase-Aktivität ist wichtig für die Transduktion mitogener Signale.

Während der letzten Jahre wurde eine stattliche Anzahl von Zytokin-Rezeptoren kloniert. Ihre molekulare Charakterisierung führte zur Entdeckung einer neuen Rezeptor-Superfamilie. Zwei Motive sind diesen Zytokin-Rezeptoren gemeinsam: 4 konservierte Cysteine in der N-terminalen Hälfte des Moleküls und 1 Segment aus Tryptophan-Serin-Resten (WSXWS) in der Nähe der Transmembrandomäne des Rezeptors. Aufgrund dieser Struktureigenschaften lassen sich folgende Rezeptoren in eine Superfamilie einordnen: IL-2-R (Beta-Kette), IL-3-R, IL-4-R, IL-6-R (beide identifizierten Untereinheiten), LIF-R, IL-7-R, G-CSF-R, GM-CSF-R (beide identifizierten Untereinheiten).

In 6 Vorträgen werden neueste Erkenntnisse dargestellt und ein Überblick über das faszinierende Gebiet der Wachstumsfaktoren, Interleukine und ihre spezifischen Rezeptoren gegeben.

A. **Leutz** (Heidelberg/D)
Kinase induced autocrine growth stimulation in transformed myelomonocytic cells: Role of the C/EBP related transcription factor NF-M in CMGF gene transcription

J. G. **Flanagan** (Boston/USA)
Functions of the kit ligand, a transmembrane growth factor locus

J. F. **Bazan** (San Francisco/USA)
The superfamily of hemopoietic receptors and helical cytocines

D. **Gearing** (Seattle/USA)
Molecular characterization of the Leukemia Inhibitory Factor Receptor

S. K. **Dower** (Seattle/USA)
Structure and function of interleukin-1-receptors

S. **Rose-John** (Aachen/D)
Studies on the structure and function of interleukin-6 and its receptor

SYMPOSIUM 5

Biological Concepts for Individualized Cancer Management: Emerging Analytical Technology

Mittwoch/Wednesday, 6. 5., 9.00–13.00, Konferenzsaal K2

Chairman: M. **Werner** (Washington/USA)

Chemical induction of cancer has informed the fundamentals of tumor biology for decades, but the insights gained from these classical models of experimental carcinogenesis have not translated into practical advances of clinical oncology. The mechanisms of malignant transformation and metastasis which genomic analysis now can uncover in individual patients, on the other hand, promise to enhance both diagnosis and prognosis. At the same time, such findings eventually should form the basis of novel concepts of carcinogenesis.

A generic rating system of six evaluation criteria for clinical tumor markers will be presented first. Next, the diagnostic utilization of assays of suppressor genes will be analyzed using retinoblastoma as an example, and the prognostic utilization of assays of metastasis suppressor genes will be discussed using breast cancer as an example. The mechanisms of enhanced oncogene expression and such amplification in malignant cells will be illustrated using the *myc* family of oncogenes as an example. Finally, the impact of analytical progress on the recognition of minimal residual cancer following therapy, and on the reduction of clinical recurrency will be assessed.