

Contents

Contents of Number 1/2

Invited Trends Article

Stilbene and Chalcone Synthases: Related Enzymes with Key Functions in Plant-Specific Pathways
J. SCHRÖDER and G. SCHRÖDER 1

Original Communications

Ascorbic Acid Radicals as Indicator of Damage to Forest – EPR Investigations of Spruce Needles *in vivo* (In German)
H. B. STEGMANN, P. SCHULER, and H.-J. RUFF 9

Growth and Terpenoid Production of an Axenic Culture from the Liverwort *Ricciocarpos natans*
G. WURZEL and H. BECKER 13

Superoxide Scavenging Properties of Flavonoids in a Non-Enzymic System
A. I. HUGUET, S. MÁÑEZ, and M. J. ALCARAZ 19

New Flavonoids from the Moss *Bryum pseudotriquetrum*
W. STEIN and H. D. ZINSMEISTER 25

Volatile Components of the Essential Oils of Four Chinese Species in the Genus *Asarum* (Aristolochiaceae)
N. HAYASHI, J. DING, Z. DING, Z. CHEN, Y. YI, and H. KOMAE 32

Enzymatic Synthesis of Di-O-phenylcarboxyl- β -D-glucose Esters by an Acyltransferase from Oak Leaves
G. G. GROSS, K. DENZEL, and G. SCHILLING 37

Hysteresis and Reversible Cold Inactivation of Maize Phosphoenolpyruvate Carboxylase
L. A. KLECZKOWSKI and G. E. EDWARDS 42

The SO_4^{2-} -induced Oxidation of 2'-Deoxyuridine-5'-phosphate, Uridine-5'-phosphate and Thymi-

dine-5'-phosphate. An ESR Study in Aqueous Solution
K. HILDENBRAND 47

Properties of Purine Nucleoside Phosphorylase (PNP) of Mammalian and Bacterial Origin
A. BZOWSKA, E. KULIKOWSKA, and D. SHUGAR 59

The Influence of 5-Aminolevulinic Acid on Protochlorophyllide and Protochlorophyll Accumulation in Dark-Grown *Scenedesmus*
K. KOTZABASIS and H. SENGER 71

Cellular Amino Acid Concentrations and Regulation of Aspartate Kinase in the Thermophilic Phototrophic Prokaryote *Chloroflexus aurantiacus*
J.-H. KLEMME, G. LAAKMANN-DITGES, and J. MERTSCHUWEIT 74

Hydrophilic Interactions between Charged Amino Acids and the Effect of Ions on the Strength of Interaction
T. CSERHÁTI and M. SZÖGYI 79

Effect of Different Cyclohexane-1,3-dione Derivatives on the *de novo* Fatty-Acid Biosynthesis in Isolated Oat Chloroplasts
K. KOBÉK and H. K. LICHTENTHALER 84

Anticytokinin Activity of N-Phenyl- and N-Pyridylcarbamates
R. SHIMIZU, H. IWAMURA, and T. FUJITA 89

Influence of Oxime Ether Safeners on Glutathione Content and Glutathione-Related Enzyme Activity in Seeds and Seedlings of Grain Sorghum
S. P. YENNE and K. K. HATZIOS 96

Re-Activation of the Expression of Glyoxysomal Genes in Green Plant Tissue
R. BIRKHAN and H. KINDL 107

Indications of Sexual Reproduction in the Plasmoidal Protist *Chlorarachnion reptans* Geitler (In German)
K. G. GRELL 112



Dieses Werk wurde im Jahr 2013 vom Verlag Zeitschrift für Naturforschung in Zusammenarbeit mit der Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. digitalisiert und unter folgender Lizenz veröffentlicht: Creative Commons Namensnennung-Keine Bearbeitung 3.0 Deutschland Lizenz.

Zum 01.01.2015 ist eine Anpassung der Lizenzbedingungen (Entfall der Creative Commons Lizenzbedingung „Keine Bearbeitung“) beabsichtigt, um eine Nachnutzung auch im Rahmen zukünftiger wissenschaftlicher Nutzungsformen zu ermöglichen.

This work has been digitalized and published in 2013 by Verlag Zeitschrift für Naturforschung in cooperation with the Max Planck Society for the Advancement of Science under a Creative Commons Attribution-NoDerivs 3.0 Germany License.

On 01.01.2015 it is planned to change the License Conditions (the removal of the Creative Commons License condition “no derivative works”). This is to allow reuse in the area of future scientific usage.

Organ Specific Storage of Dietary Pyrrolizidine Alkaloids in the Arctiid Moth <i>Cretonotos transiens</i> A. EGEHAAF, K. CÖLLN, B. SCHMITZ, M. BUCK, M. WINK, and D. SCHNEIDER	115	New Rotenoids from the Root Bark of Jamaican Dogwood (<i>Piscidia erythrina</i> L.) S. TAHARA, E. NARITA, J. L. INGHAM, and J. MIZUTANI	154
Closure of a Rapidly Exchanging Calcium Compartment in Rat Cardiac Myocytes by Lanthanum CH. HARTL, S. FISCHER, and W. HASSELBACH	121	Phytochemical Investigations on Western European <i>Lasallia</i> Species (In German) B. POSNER, G. B. FEIGE, and S. HUNECK	161
Carbohydrate Tolerance Status in Patients with Myocardial Infarction M. A. RAHMAN, H. BEGUM, A. SAMAD, and S. SHAHJEHAN	125	High Oleic Sunflower: Studies on Composition and Desaturation of Acyl Groups in Different Lipids and Organs P. SPERLING, U. HAMMER, W. FRIEDT, and E. HEINZ	166
Sclerotization of Insect Cuticle in a Cell-Free System O. P. AGRAWAL and K. SCHELLER	129	Enzymic Properties of Purified Myrosinase from <i>Lepidium sativum</i> Seedlings P. L. DURHAM and J. E. POULTON	173
<i>Notes</i>		Antifungal Antibiotics from <i>Calcarisporium thermophilum</i> : A New Source of 15-Azahomosterol Derivatives P. CHRISP, P. M. DEWICK, and F. T. BOYLE	179
Effect of β -Carotene on Delayed Light Emission from Aggregated Chlorophyll S.-Y. YANG and S. S. BRODY	132	The Essential Oil of <i>Coleonema album</i> (Rutaceae) and of a Photomixotrophic Cell Culture Derived thereof R. G. BERGER, Z. AKKAN, and F. DRAWERT	187
Structure Confirmation for an Unusual Flavanone from <i>Encelia stenophylla</i> M. IINUMA, T. TANAKA, M. MIZUNO, and E. WOLLENWEBER	135	Synthesis and Use of Radiolabelled Cyanoacrylate Probes of the Photosystem II Herbicide Binding Site H. G. MCFADDEN and J. N. PHILLIPS	196
Changes of Acuity during Light and Dark Adaptation in the Dragonfly Compound Eye E. J. WARRANT and R. B. PINTER	137	A Photosynthetic Antenna System which Contains a Protein-Free Chromophore Aggregate A. R. HOLZWARTH, K. GRIEBENOW, and K. SCHAFFNER	203
Contents of Number 3/4		Studies on the Biosynthesis of γ -Decalactone in <i>Sporobolomyces odoros</i> W. ALBRECHT and R. TRESSL	207
<i>Original Communications</i>		Light-Dependent Sucrose Synthesis in Cell-Free (Reconstituted) Lysates of Evacuolated Mesophyll Protoplasts M. STEINGRABER, H. FROHNMEYER, and R. HAMPP	217
Kaempferol Glycosides in <i>Asplenium scolopendrium</i> Newm. M. MIZUNO, Y. KYOTANI, M. IINUMA, T. TANAKA, H. KOJIMA, and K. IWATSUKI	143	Carnivora: The Amino Acid Sequence of the Adult European Mink (<i>Mustela lutreola</i> , Mustelidae) Hemoglobins A. AHMED, M. JAHAN, and G. BRAUNITZER †	223
Further Isoflavonoids from White Lupin Roots S. TAHARA, S. SHIBAKI, J. L. INGHAM, and J. MIZUTANI	147		

Evidence for a Vacuolar-Type Proton ATPase in <i>Entamoeba histolytica</i> U. LÖHDEN-BENDINGER and T. BAKKER-GRUNWALD	229	Monophosphates and Cyclic Phosphates of Some Antiviral Acyclonucleosides: Synthesis, Conformation and Substrate/Inhibitor Properties in Some Enzyme Systems R. STOLARSKI, J. M. CIESLA, and D. SHUGAR	293
Elicitation of β -1,3-Glucanase and Chitinase Activities in Cell Suspension Cultures of <i>Ascochyta rabiei</i> Resistant and Susceptible Cultivars of Chickpea (<i>Cicer arietinum</i>) R. VOGELSANG and W. BARZ	233	Evidence that Cytochalasins Reduce the Size of Polymerization Nuclei during Actin Polymerization H. WENDEL and P. DANCKER	300
Excretion into the Culture Medium of a <i>Bacillus</i> β -Glucanase after Overproduction in <i>Escherichia coli</i> S. RIETHDORF, A. ULRICH, U. VÖLKER, and M. HECKER	240	Influence of High Steady Magnetic Fields on the Electrical Activity of the Electric Fish <i>Apteronotus</i> L. STOJAN, D. SPERBER, and K. DRANSFELD	303
Biotransformation of Monoterpenes by Polyurethane Foam-Immobilized Cells of <i>Petroselinum crispum</i> (Mill) Nyman A. A. GBOLADE and G. B. LOCKWOOD	245	Directed Growth of Fungal Hyphae in an Electric Field. A Biophysical Analysis H. GRULER and N. A. R. GOW	306
The Presence of Malate Dehydrogenase in Thylakoids of <i>Anabaena cylindrica</i> , <i>Nostoc muscorum</i> and <i>Chlorogloeopsis fritschii</i> A.-K. J. SALLAL and N. A. NIMER	249		
Changes of the Polypeptide Composition in Thylakoid Membranes during Differentiation M. DROPPA, J. MASOJIDEK, and G. HORVÁTH	253		
Light-Induced Oxidation-Reduction Reactions of Photosystem II in Dichlorophenyl-dimethyl Urea (DCMU) Inhibited Thylakoids J. A. NEMSON and A. MELIS	258		
X-Ray and Fluorescence Studies on Phospholipid Bilayers. IX. Interactions with Pentachlorophenol M. SUWALSKY, M. A. ESPINOZA, M. BAGNARA, and C. P. SOTOMAYOR	265		
Light-Induced Activation and Synchronization of the Cytochrome P-450 Dependent Monooxygenase System W. HÄBERLE, H. GRULER, PH. DUTKOWSKI, and D. MÜLLER-ENOCH	273		
Phosphohydrolase Activities in Developing and Mature Dental Tissues E. WARTH and R. JECK	280		
		Contents of Number 5	
		Herbicides Active in the Chloroplast	
		Preface P. BÖGER, C. FEDTKE, and W. OETTMEIER	315
		I. Photosystem II Inhibitors	
		Phloroglucinol Derivatives as Potent Photosystem II Inhibitors K. YONEYAMA, M. KONNAI, I. HONDA, S. YOSHIDA, N. TAKAHASHI, H. KOIKE, and Y. INOUE	317
		The Aurachins, Naturally Occurring Inhibitors of Photosynthetic Electron Flow Through Photosystem II and the Cytochrome <i>b₆/f</i> -Complex W. OETTMEIER, R. DOSTATNI, CH. MAJEWSKI, G. HÖFLE, TH. FECKER, B. KUNZE, and H. REICHENBACH	322
		Heuristic Approaches to Finding New Herbicides Active in the Chloroplast S. YOSHIDA	329

Cyanoacrylate Inhibitors as Probes for the Nature of the Photosystem II Herbicide Binding Site J. L. HUPPATZ, H. G. MCFADDEN, and L. F. MCCAFFERY	336	Amino Acid Substitutions in the D1 Protein of Photosystem II Affect Q_B^- Stabilization and Accelerate Turnover of D1 N. OHAD, D. AMIR-SHAPIRA, H. KOIKE, Y. INOUE, I. OHAD, and J. HIRSCHBERG	402
Hydrophilic Photosystem II Inhibitors: Cyanoacrylate Thiolate Salts J. N. PHILLIPS	343	Differential Sensitivity of 32 kDa-D1 Protein Degradation and Photosynthetic Electron Flow to Photosystem II Herbicides M. A. K. JANSEN, S. MALKIN, and M. EDELMAN	408
Kinetics of Action of Different Photosystem II Herbicides on Thylakoids J.-M. DUCRUET, S. CREUZET, and J. VIÉNOT	348	Free Radical Scavengers Inhibit Light-Dependent Degradation of the 32 kDa Photosystem II Reaction Center Protein S. K. SOPORY, B. M. GREENBERG, R. A. MEHTA, M. EDELMAN, and A. K. MATTOO	412
An Application of Thermoluminescence to Herbicide Studies H. M. GLEITER, N. OHAD, J. HIRSCHBERG, R. FROMME, G. RENGGER, H. KOIKE, and Y. INOUE	353	A Rapid Method for Partial mRNA and DNA Sequence Analysis of the Photosystem II <i>psbA</i> Gene D. NABER, U. JOHANNINGMEIER, and J. J. S. VAN RENSEN	418
II. The Binding Site of Photosystem II Inhibitors		Targeted Deletion Mutagenesis of the β Subunit of Cytochrome b_{559} Protein Destabilizes the Reaction Center of Photosystem II H. B. PAKRASI, K. J. NYHUS, and H. GRANOK	423
Q_A Binding to D2 Contributes to the Functional and Structural Integrity of Photosystem II W. VERMAAS, J. CHARITÉ, and G. SHEN	359	A New Method of Solvation Analysis: Applications to Quinones J. M. KESKE, J. M. BRUCE, and P. L. DUTTON	430
Studies on the Herbicide Binding Site in Isolated Photosystem II Core Complexes from a Flat-Bed Isoelectrofocusing Method M. T. GIARDI, J. BARBER, M. C. GIARDINA, and R. BASSI	366	III. Resistance to Herbicides	
Studies on Herbicide Binding in Photosystem II Membrane Fragments from Spinach R. FROMME and G. RENGGER	373	A New Ioxynil-Resistant Mutant in <i>Synechocystis</i> PCC 6714: Hypothesis on the Interaction of Ioxynil with the D1 Protein S. CREUZET, G. AJLANI, C. VERNOTTE, and C. ASTIER	436
Molecular Modelling Studies on the Binding of Phenylurea Inhibitors to the D1 Protein of Photosystem II J. BOWYER, M. HILTON, J. WHITELEGGE, P. JEWESS, P. CAMILLERI, A. CROFTS, and H. ROBINSON	379	Conserved Kinetics at the Reducing Side of Reaction-Center II in Photosynthetic Organisms; Changed Kinetics in Triazine-Resistant Weeds M. A. K. JANSEN and K. PFISTER	441
Determination of Catabolism of the Photosystem II D1 Subunit by Structural Motifs in the Polypeptide Sequence C. A. SHIPTON, J. B. MARDER, and J. BARBER	388	Anacystis Mutants with Different Tolerances to DCMU-Type Herbicides Show Differences in Architecture and Dynamics of the Photosynthetic Apparatus, Depending on Site and Mode of the Amino Acid Exchanges in the D1 Protein F. KOENIG	446
Photoinactivation of Photosystem II and Degradation of the D1 Protein are Reduced in a Cytochrome b_6/f -Less Mutant of <i>Chlamydomonas reinhardtii</i> S. SHOCHAT, N. ADIR, A. GAL, Y. INOUE, L. METS, and I. OHAD	395		

Fluorescence Induction Characteristics of Wild-Type and Herbicide-Resistant Strain of the Photosynthetic Bacterium <i>Rhodobacter capsulatus</i> G. HORVÁTH, M. DROPPA, and Á. PUSKÁS	452	Herbicidal Inhibition of Carotenogenesis Detected by HPLC P. BARRY and K. E. PALLETT	498
First Glance on the Three-Dimensional Structure of the Photosynthetic Reaction Center from a Herbicide-Resistant <i>Rhodopseudomonas viridis</i> Mutant I. SINNING, J. KOEPKE, B. SCHILLER, and H. MICHEL	455	Interactions of the Bleaching Herbicide Clomazone with Reduced Glutathione and Other Thiols W. K. VENCILL, K. K. HATZIOS, and H. P. WILSON	498
Sequence Analysis of Four Atrazine-Resistant Mutants from <i>Rhodopseudomonas viridis</i> G. EWALD, C. WIESSNER, and H. MICHEL	459	Recent Advances in the Mode of Action of Diphenyl Ethers and Related Herbicides R. SCALLA, M. MATRINGE, J.-M. CAMADRO, and P. LABBE	503
Mode of Evolved Photooxidant Resistance to Herbicides and Xenobiotics M. A. K. JANSSEN, CH. MALAN, Y. SHAALTIEL, and J. GRESSEL	463	Typical Peroxidative Parameters Verified with Mung-Bean Seedlings, Soybean Cells and Duckweed G. SANDMANN, B. NICOLAUS, and P. BÖGER	512
Negative Cross Resistance; a Possible Key to Atrazine Resistance Management: A Call for Whole Plant Data J. GRESSEL and L. A. SEGEL	470	Effect of Thiolactomycin on <i>de novo</i> Fatty Acid Biosynthesis in Plants M. FOCKE, A. FELD, and H. K. LICHTENTHALER	518
Differential Pleiotropy in a <i>psbA</i> Gene Mutant of <i>Brassica napus</i> Implies Altered Temporal Photosynthesis and Thermal Tolerance J. DEKKER and R. G. BURMESTER	474	Mode of Action of Herbicides Affecting Acetyl-CoA Carboxylase and Fatty Acid Biosynthesis H. K. LICHTENTHALER	521
Segregation of Triazine-Resistant Chloroplasts after Introduction into Winter Type Oilseed Rape (<i>Brassica napus</i> L.) by Protoplast Fusion R. HAIN and J. E. THOMZIK	478		
IV. Interference with Pigment and Lipid Biosynthesis; Peroxidation		V. Amino Acid and N-Metabolism; Miscellaneous	
Cloning a Gene Coding for Norflurazon Resistance in Cyanobacteria D. CHAMOVITZ, I. PECKER, G. SANDMANN, P. BÖGER, and J. HIRSCHBERG	482	Glyphosate Transport and Early Effects on Shikimate Metabolism and Its Compartmentation in Sink Leaves of Tomato and Spinach Plants A. SCHULZ, TH. MUNDER, H. HOLLÄNDER-CZYTKO, and N. AMRHEIN	529
Accumulation of Colorless Carotenes and Derivatives during Interaction of Bleaching Herbicides with Phytoene Desaturation G. SANDMANN and M. ALBRECHT	487	Effect of Phosphinothricin (Glufosinate) on Photosynthesis and Photorespiration CH. WENDLER and W. WILD	535
		Molecular Characterization of Genes Coding for Wild-Type and Sulfonyleurea-Resistant Acetolactate Synthase in the Cyanobacterium <i>Synechococcus</i> PCC 7942 D. FRIEDBERG and J. SEIFFERS	538
		Acetolactate Synthase and Ketol-Acid Reductoisomerase: Targets for Herbicides Obtained by Screening and <i>de novo</i> Design J. V. SCHLOSS and A. AULABAUGH	544

Diphenyl Ether Herbicides, a Tool to Elucidate the Mechanism of Photophosphorylation B. HUCHZERMAYER and A. LÖHR	552	Comparative Investigation on Formation and Accumulation of Rare Phenylpropanoids in Plants and <i>in vitro</i> Cultures of <i>Pimpinella major</i> B. MERKEL and J. REICHLING	602
Metabolism of Metolachlor by a Microsomal Fraction Isolated from Grain Sorghum (<i>Sorghum bicolor</i>) Shoots D. E. MORELAND, F. T. CORBIN, W. P. NOVITZKY, C. E. PARKER, and K. B. TOMER	558	Adenylate Kinase from Maize Leaves: True Substrates, Inhibition by P ⁱ , P ^s -di(adenosine-5')pentaphosphate and Kinetic Mechanism L. A. KLECZKOWSKI, D. D. RANDALL, and W. L. ZAHLER	607
Synergistic Activity of the Herbicide Safener Dichlormid with Herbicides Affecting Photosynthesis C. FEDTKE and R. H. STRANG	565	Ascorbic Acid and Chlorophyll Content in Cell Cultures of Spruce (<i>Picea abies</i>): Changes by Cell Culture Conditions and Air Pollutants B. MESSNER and J. BERNDT	614
Contents of Number 6		Characterization of Conformers of D1 of Photosystem II Using Site-Directed Antibodies R. T. BESFORD, B. THOMAS, N. S. HUSKISSON, and G. W. BUTCHER	621
Invited Trends Article		Surface Charge Density Changes in Isolated Photosystem II Membranes Induced by Depletion of the Extrinsic Polypeptides of the Oxygen Evolving System A. G. IVANOV, M. C. BUSHEVA, and M. Y. VELITCHKOVA	627
Elicitor Recognition and Signal Transduction in Plant Defense Gene Activation D. SCHEEL and J. E. PARKER	569	Ribulose-1,5-bisphosphate Carboxylase-Binding Chloroplast Thylakoid Membrane Proteins. <i>In vitro</i> Evidence that H ⁺ -ATP Synthase may Serve as a Membrane Receptor K.-H. SÜSS	633
Original Communications		UVA-Induced Genetic Effects of Thioridazine, Mesoridazine and Sulfuridazine: an <i>in vitro</i> Study S. A. SCHOONDERWOERD, G. M. J. BEIJERSBERGEN VAN HENEGOUWEN, and I. R. PANDAY	638
Porin of <i>Rhodobacter capsulatus</i> : Biochemical and Functional Characterization D. WOITZIK, J. WECKESSER, R. BENZ, S. STEVANOVIC, G. JUNG, and J. P. ROSENBUSCH	576	X-Ray Induced Inactivation of the Sulfhydryl Enzyme Malate Synthase in the Presence of Various Additives. Probing the Extent of Primary and Post-Irradiation Inactivation and Repair by Rapid Screening on the Microlevel H. DURCHSCHLAG and P. ZIPPER	645
The Biflavonoid Pattern of <i>Rhytidadelphus squarrosus</i> (Hedw.) Warnst. T. SEEGER, H. D. ZINSMEISTER, and H. GEIGER	583	Ribonucleosides in Milk: Characterization and Determination of the Concentration Profile of these Minor Components throughout a Lactation Period (In German) K.-P. RAEZKE and E. SCHLIMME	655
Phenolic Composition of Bud Exudates of <i>Populus deltoides</i> W. GREENAWAY, S. ENGLISH, and F. R. WHATLEY	587		
Hybrid Origin of <i>Populus × jackii</i> Confirmed by Gas Chromatography-Mass Spectrometry Analysis of Its Bud Exudate W. GREENAWAY, C. G. DAVIDSON, T. SCAYSBROOK, J. MAY, and F. R. WHATLEY	594		
Epicuticular Waxes from Leaves of Maple (<i>Acer pseudoplatanus</i> L.) R. B. N. PRASAD and P.-G. GÜLZ	599		

Stimulation of Calmodulin Binding to Skeletal Muscle Membrane Proteins by 1,25-Dihydroxy-Vitamin D ₃ V. MASSHEIMER, L. M. FERNANDEZ, and A. R. DE BOLAND	663
On the Problem of Season and Cold Dependence of Calcium Transport by Skeletal Muscle Sarcoplasmic Reticulum B. AGOSTINI, L. DE MARTINO, and W. HASSELBACH	671
Efficacy of Different Hexacyanoferrates(II) in Inhibiting the Intestinal Absorption of Radio-caesium in Rats B. DRESOW, P. NIELSEN, and H. C. HEINRICH	676
Bioavailability of Iron and Cyanide from ⁵⁹ Fe- and ¹⁴ C-Labelled Hexacyanoferrates(II) in Rats P. NIELSEN, B. DRESOW, R. FISCHER, and H. C. HEINRICH	681
Morphology and Chemical Contents of Dufour Glands of <i>Pseudomyrmex</i> Ants (Hymenoptera: Formicidae) A. B. ATTYGALLE, J. P. J. BILLEN, B. D. JACKSON, and E. D. MORGAN	691
Determination of Relative Volatility of Lepidoptera Sex Pheromones by Closed Loop Stripping (In German) H. J. BESTMANN, J. ERLER, and O. VOSTROWSKY	698
14-Deoxyecdysteroids in an Insect (<i>Gryllus bimaculatus</i>) K. H. HOFFMANN, E. THIRY, and R. LAFONT	703
Ontogenetic Patterns in Amounts and Proportions of Dufour's Gland Volatile Secretions in Virgin and Nesting Queens of <i>Lasioglossum malachurum</i> (Hymenoptera: Halictidae) M. AYASSE, W. ENGELS, A. HEFETZ, G. LÜBKE, and W. FRANCKE	709
Cytoplasmic Vibrations Due to Flagellar Beating in <i>Trichoplax adhaerens</i> F. E. Schulze (Placozoa) H. WENDEROTH	715
Dominance of Celestial Cues over Landmarks Disproves Map-Like Orientation in Honey Bees R. MENZEL, L. CHITTKA, S. EICHMÜLLER, K. GEIGER, D. PEITSCH, and P. KNOLL	723

Notes

Production of β -Carboline Alkaloids in Transformed Root Cultures of <i>Peganum harmala</i> L. I. N. KUZOVKINA, A. GOHAR, and I. E. ALTERMAN	727
Short-Wavelength Absorbing Complexes of Chlorophyll <i>a</i> in Micellar Solution of Cationic Detergents A. SCHMIDT, J. GOTTSTEIN, H. SCHEER, and A. SCHERZ	729

Contents of Number 7/8

Original Communications

The Ribulose Bisphosphate Carboxylase/Oxygenase of <i>Prochlorothrix hollandica</i> : Purification, Subunit Structure and Partial N-Terminal Sequence Analysis of the Large Subunit A. M. HAWTHORNTHWAIT, T. J. BEANLAND, C. J. HOWE, and G. A. CODD	733
Effect of Antisera to RuBP-Carboxylase/Oxygenase of <i>N. tabacum</i> and <i>Spinacia oleracea</i> on the Oxygenase-Function of the Enzyme M. BEUTTENMÜLLER, C. NESPOULOUS, A. RADUNZ, and G. H. SCHMID	739
Characterization of RuBP Carboxylase/Oxygenase of the <i>N. tabacum</i> Mutant Series "Consolation" with Homologous and Non-Homologous Antisera S. GEORGI, A. RADUNZ, and G. H. SCHMID	749
Quantitative Determination of the Distribution between Two Photosystem II-Mediated Oxidation Reactions in <i>Oscillatoria chalybea</i> : A Comparison between Water Oxidation and Hydrogen Peroxide Decomposition K. P. BADER and G. H. SCHMID	757
Degradation of the D-1 Protein Subunit of Photosystem II in Isolated Thylakoids by UV Light A. TREBST and B. DEPKA	765
The "Additional Subunit" CF ₀ II of the Photosynthetic ATP-Synthase and the Thylakoid Poly-	

- peptide, Binding Ferredoxin NADP Reductase: Are they Different?
R. J. BERZBORN, L. KLEIN-HITPASS, J. OTTO, ST. SCHÜNEMANN, R. OWORAH-NKRUMA, and H. E. MEYER 772
- The Effect of Phytohormones and Sucrose Supply on the Induction of Tryptophan Decarboxylase in Developing Embryos of *Juglans regia* L.
K. U. LACHMANN and W. GROSSE 785
- Arsenic Depuration via the *Tridacna* Gill Membrane
A. A. BENSON 793
- Isolation and Characterization of a Polysaccharide Antigen from *Propionibacterium acnes* Released by a Glycine-Specific Chemical Protein Degradation Procedure
M. F. VEROSTEK, L. E. BARTHOLOMEW, and P. WEBER 797
- Developmental and Seasonal Variations in the Epicuticular Waxes of Beech Leaves (*Fagus sylvatica* L.)
R. B. N. PRASAD and P.-G. GÜLZ 805
- Surface Structure and Chemical Composition of Leaf Waxes from *Quercus robur* L., *Acer pseudoplatanus* L. and *Juglans regia* L.
R. B. N. PRASAD and P.-G. GÜLZ 813
- The Primary Structure of the Presumable BChl *d*-Binding Polypeptide of *Chlorobium vibrioforme* f. *thiosulfatophilum*
R. WAGNER-HUBER, U. FISCHER, R. BRUNIS-HOLZ, M. RÜMBELI, G. FRANK, and H. ZUBER 818
- The 5.6-Kilodalton Protein in Isolated Chlorosomes of *Chloroflexus aurantiacus* Strain Ok-70-fl is a Degradation Product
K. GRIEBENOW, A. R. HOLZWARTH, and K. SCHAFFNER 823
- A Further Investigation of Phytoalexin Formation in the Genus *Trifolium*
J. L. INGHAM 829
- Natural Inhibitors of Germination and Growth, V. Possible Allelopathic Effects of Compounds from *Thuja occidentalis*
U. OSTER, M. SPRaul, and W. RÜDIGER 835
- Fulvoferruginin, a Carotane Antibiotic from *Marasmius fulvoferrugineus* Gilliam
J. KLEIN, T. ANKE, W. S. SHELDRIK, M. BROSS, B. STEFFAN, and W. STEGLICH 845
- Hormaomycin, a New Peptide Lactone Antibiotic Effective in Inducing Cytodifferentiation and Antibiotic Biosynthesis in Some *Streptomyces* Species
N. ANDRES, H. WOLF, and H. ZÄHNER 851
- The Herbicide *Command* does Not Inhibit the Prenyl Diphosphate-Forming Enzymes in Plastids
M. LÜTZOW, P. BEYER, and H. KLEINIG 856
- Rhythmic Leaf Movements under Physical Loading of the Leaves
M. PEDERSEN, A. JOHNSON, and R. HERBJØRSEN 859
- Pheromones of the Scarabaeinae, II. Composition of the Pheromone Disseminating Carrier Material Secreted by Male Dung Beetles of the Genus *Kheper*
B. V. BURGER, Z. MUNRO, and W. F. BRANDT 863
- Hyaluronic Acid-Like Substance from Mouse Ovaries with Angiogenic Activity
E. SATO, H. MIYAMOTO, and S. S. KOIDE 873
- Time-Course of Pyrrolizidine Alkaloid Processing in the Alkaloid Exploiting Arctiid Moth, *Creatonotos transiens*
E. v. NICKISCH-ROSENECK, D. SCHNEIDER, and M. WINK 881
- Oviposition Deterrent from Larval Frass of *Spodoptera littoralis* (Boisd.) (In German)
B. KLEIN, H. SCHILDKNECHT, M. HILKER, and S. BOMBOSCH 895
- Electron Microscopic Study of the Polymyxin Treated *Vibrio cholerae* Cells
T. K. MANDAL 902
- A Method for Estimating Glycine in the Presence of Excess Glutamate with *o*-Phthaldialdehyde
M. E. LOMBARDO, L. S. ARAUJO, A. BRANCA, and A. M. DEL C. BATLLE 911
- Solid State and Solution Structures of an Adenine Analogue of the Antiviral Acyclonucleoside

9-(1,3-dihydroxy-2-propoxymethyl)guanine J. GRANZIN, W. SAENGER, R. STOLARSKI, and D. SHUGAR 915	3 β -Hydroxysteroid Oxidoreductase in Suspension Cultures of <i>Digitalis lanata</i> EHRH H. M. WARNECK and H. U. SEITZ 963
<i>Notes</i>	3-Hydroxy-3-methylglutaryl Coenzyme A Reduc- tase from Spruce (<i>Picea abies</i>). Properties and Regulation M. BOLL and A. KARDINAL 973
Chemical Composition of Chickpea, <i>Cicer arietinum</i> , Exudate H. REMBOLD and CH. WEIGNER 922	Photophysical and Photochemical Properties of 2,3-Dihydro-4(1H)-quinolinones. Part I. Fluo- rescence Properties SN. BAKALOVA, L. BICZÓK, I. KAVRAKOVA, and T. BÉRCES 980
Sex Pheromones in Nereids: Volatile Compounds of the Coelomic Fluid of <i>Nereis virens</i> E. ZEECK and J. D. HARDEGE 924	Computer Analysis of Phytochrome Sequences from Five Species: Implications for the Mecha- nism of Action M. D. PARTIS and R. GRIMM 987
Contents of Number 9/10	Two Forms of Herbicide-Sensitive Acetolactate Synthase under Different Control by 2-Oxo- butyrate in <i>Rhodospirillum rubrum</i> J.-H. KLEMME and I. SCHNEIDER 999
<i>Original Communications</i>	Hypothesis for Structure and Oxidation State of Manganese Cluster in Oxygen-Evolving Center Deduced from Their Magnetic Properties Y. NISHIDA and M. NASU 1004
Further Novel 6,7-Dimethoxy-8-Prenylated Cou- marins from the Aerial Parts of <i>Phebalium elatius</i> ssp. <i>beckleri</i> J. A. EL-TURBI, J. A. ALEXANDER, A. I. GRAY, and P. G. WATERMAN 927	Timing of Changes in Protein Synthesis Pattern in Elicitor-Treated Cell Suspension Cultures of Parsley (<i>Petroselinum crispum</i>) J. BOLLMANN and K. HAHLBROCK 1011
Variation in Bud Exudate Composition of <i>Populus nigra</i> Assessed by Gas Chromatography-Mass Spectrometry W. GREENAWAY, S. ENGLISH, and F. R. WHATLEY 931	Asymmetric Reconstitution of the Erythrocyte Anion Transport System in Vesicles of Different Curvature: Implications for the Shape of the Band 3 Protein S. LINDENTHAL, U. SCHEURING, H. RUF, Z. KOJRO, W. HAASE, P. PETRASCH, and D. SCHUBERT 1021
A Further Contribution to the Triterpenoid Con- stituents of <i>Glycyrrhiza glabra</i> L. M. H. A. ELGAMAL, F. K. ABDEL HADY, A. G. HANNA, G. H. MAHRAN, and H. DUDDECK 937	Aneuploid and Polyploid Cellular DNA Hetero- geneity in Insect Cell Material of Diptera Species Analyzed by Flow Cytometry W. ULRICH 1027
Further Studies on the Biosynthesis of Pseudo- isoeugenols in Tissue Cultures of <i>Pimpinella anisum</i> J. REICHLING and R. MARTIN 942	The Kinetics of Hydroxyl-Radical-Induced Strand Breakage of Hyaluronic Acid. A Pulse Radio-
Uptake of Alkaloids by Latex Vesicles and Isolat- ed Mesophyll Vacuoles of <i>Chelidonium majus</i> (Papaveraceae) M.-T. HAUSER and M. WINK 949	
Defence Reactions in <i>Rhizobium</i> -Legume Sym- biosis: Phytoalexin Concentration in <i>Vicia faba</i> Nodules is Affected by the Host Plant Genotype A. B. WOLFF and D. WERNER 958	

lysis Study Using Conductometry and Laser-Light Scattering D. J. DEEBLE, E. BOTHE, H.-P. SCHUCHMANN, B. J. PARSONS, G. O. PHILLIPS, and C. V. SONNTAG	1031	Contents of Number 11/12
Photoaffinity Labeling of Lactate Dehydrogenase by the Bis-azido Analog of NAD ⁺ :P ¹ -N ⁶ -(4-azidophenylethyl)adenosine-P ² -[4-(3-azidopyridinio)butyl]diphosphate CH. WOENCKHAUS and R. FILBRICH	1044	<i>Original Communications</i>
Fate of Circulating Serotonin in the Hemolymph of the Crayfish, <i>Orconectes limosus</i> U. HOEGER	1053	Flavonol Glycosides from <i>Paederia scandens</i> var. <i>mairei</i> N. ISHIKURA, ZH. YANG, K. YOSHITAMA, and K. KUROSAWA
Thermal Behaviour of Lymphocyte Membrane: ESR Investigation S. MAZZUCA and L. SPORTELLI	1060	1081
Fluorescence Studies on Lung Tumors W. LOHMANN, B. HIRZINGER, J. BRAUN, K. SCHWEMMLE, K.-H. MUHRER, and A. SCHULZ	1063	A Survey of Alkaloids in <i>Spartium junceum</i> L. (Genisteae-Fabaceae) R. GREINWALD, G. LURZ, L. WITTE, and F.-CH. CZYGAN
Direct Measurement of the Flight Behavior of Male Moths to Calling Females and Synthetic Sex Pheromones P. WITZGALL and H. ARN	1067	1085
<i>Notes</i>		<i>n</i> -Alkanes – Common Surface Constituents of Pollen from Gymno- and Angiosperms S. HAGENBERG, K. WEHLING, and R. WIERMANN
Flavonoids from <i>Vicia faba</i> Seed Exudates F. TOMÁS-LORENTE, M. M. GARCÍA-GRAU, and F. A. TOMÁS-BARBERÁN	1070	1090
Essential Oil of Alfavaca, <i>Ocimum gratissimum</i> , from Brazilian Amazon O. VOSTROWSKY, W. GARBE, H.-J. BESTMANN, and J. G. S. MAIA	1073	Screening of Basidiomycetes and Ascomycetes for Plant Growth Regulating Substances. Introduction of the Gibberellic Acid Induced <i>de-novo</i> Synthesis of Hydrolytic Enzymes in Embryoless Seeds of <i>Triticum aestivum</i> as Test System R. HAUZEL and H. ANKE
Lack of Light Regulation of NADPH: Protochlorophyllide Oxido-Reductase mRNA in Cress Seedlings (<i>Lepidium sativum</i> L.) U. KITSTEINER, H. PAULSEN, R. SCHENDEL, and W. RÜDIGER	1077	1093
On the Propeller Structure of Isolated Watson-Crick Base Pairs V. M. KOMAROV and R. V. POLOZOV	1080	Isolation and Synthesis of New Bile Pigments Possibly Related to the Biosynthesis of the Phycocyanin Chromophore E. B. LÜÖND, H.-P. KÖST, and W. RÜDIGER
		1099
		Carotenoid Composition of Needles of <i>Picea abies</i> L. Showing Signs of Photodamage A. J. YOUNG, G. BRITTON, and M. SENSER
		1111
		An Amperometric Study on the Time Constants of Oxygen Release in Thylakoids of <i>Nicotiana tabacum</i> and <i>Oscillatoria chalybea</i> R. SCHULDER, K. P. BADER, and G. H. SCHMID
		1117
		Photosystem II Inhibition by 3-Acyl-5-(1-aminoalkylidene)-4-hydroxy-2 <i>H</i> -pyran-2,6(3 <i>H</i>)-dione Derivatives K. YONEYAMA, M. KONNAI, T. ASAMI, N. TAKAHASHI, and SH. YOSHIDA
		1127
		Protection of Photosystem II by Light in Heat-Stressed Pea Leaves M. HAVAUX and R. J. STRASSER
		1133

Herbicide Cross-Resistance and Mutations of the <i>psbA</i> Gene in <i>Chlamydomonas reinhardtii</i> G. F. WILDNER, U. HEISTERKAMP, and A. TREBST	1142	The Interaction between Hydrogen Peroxide and the DNA-Cu(I) Complex: Effects of pH and Buffers W. A. PRÜTZ	1197
Alterations in 1,4-Benzoxazinone Levels Following Inoculation with Stem Rust in Wheat Leaves Carrying Various Alleles for Resistance and Their Possible Role as Phytoalexins in Moderately Resistant Leaves C. BÜCKER and H. J. GRAMBOW	1151	The Effect of Glutathion on the Reaction of <i>cis</i> - and <i>trans</i> -Diamminedichloroplatinum(II) with DNA R. OLIŃSKI	1207
1,25-Dihydroxyvitamin D ₃ Affects the Synthesis, Phosphorylation and <i>in vitro</i> Calmodulin Binding of Myoblast Cytoskeletal Proteins A. BRUNNER and A. R. DE BOLAND	1156	Chemotherapy of Filariasis – On the Search of New Agents Effective on the Reproductive System of Female Adult Worms J. SINGH, M. SETH, N. FATMA, S. SHARMA, A. P. BHADURI, and R. K. CHATTERJEE	1210
Studies on the Substrate Specificity of Soybean Lipoyxygenase-1 Using an Entire Series of (ω 3Z, ω 6Z, ω 9Z)-C ₁₂ ~C ₂₂ -Trienoic Acids and -Trienols A. HATANAKA, T. KAJIWARA, K. MATSUI, and M. OGURA	1161	Differential <i>in vitro</i> Anti-HIV Activity of Natural Lignans H. C. SCHRÖDER, H. MERZ, R. STEFFEN, W. E. G. MÜLLER, P. S. SARIN, S. TRUMM, J. SCHULZ, and E. EICH	1215
Rat Liver DNase I – Like Activity and Its Interaction with Actin M. MALICKA-BŁASZKIEWICZ	1165	Membrane Conductance Changes Associated with the Response of Motion Sensitive Insect Visual Neurons C. GILBERT	1222
Tracing the Human Metabolism of Stable Isotope-Labelled Drugs by <i>ex vivo</i> NMR Spectroscopy. A Revision of S-Carboxymethyl-L-cysteine Bio-transformation C. O. MEESE and P. FISCHER	1171	Ovipositional Host Plant Preference of <i>Sepia officinalis</i> J. M. DENUCE	1225
The Sequence of <i>Acheta</i> Adipokinetic Hormone and the Variation in Corpus cardiacum Content and Hyperlipaemic Response with Age J. WOODRING, S. DAS, R. KELLNER, and G. GÄDE	1176	Simulations of a Fox-Rabies Epidemic on an Island Using Space-Time Finite Elements G. A. GARDNER, L. R. T. GARDNER, and J. CUNNINGHAM	1230
Sequestration, N-Oxidation and Transformation of Plant Pyrrolizidine Alkaloids by the Arctiid Moth <i>Tyria jacobaeae</i> L. A. EHMKE, L. WITTE, A. BILLER, and TH. HARTMANN	1185	Automatic Control and Directed Cell Movement. Novel Approach for Understanding Chemotaxis, Galvanotaxis, Galvanotropism H. GRULER and K. FRANKE	1241
Comparative Luminescence of Rat Liver Cu-thionein and Its Chemically Synthesized α -Domain Y. LI, L. ZHANG, E. BAYER, D. OELKRUG, and U. WESER	1193	Notes	
		Determination of Germanium in Some Plants and Animals S. HARA, N. HAYASHI, S. HIRANO, X.-N. ZHONG, SH. YASUDA, and H. KOMAE	1250
		Subject Index	1253
		Authors Index	1280