



DAFTAR PUSTAKA

- Abbo, S., T.E. Miller, S.M. Reader, R.P. Dunford & I.P. King. 1994. Detection of Ribosomal DNA Sites in Lentil and Chicpea by Fluorescent In Situ Hybridization. *Genome* 37: 713 – 716.
- Berjano, R., F. Roa, S. Talavera & M. Guerra. 2009. Cytotaxonomy of Diploid and Polyploid *Aristolochia* (*Aristolochiaceae*) Species Based on the Distribution of CMA/ DAPI Bands and 5S and 45S rDNA Sites. *Plant Systematics and Evolution* 280: 219 – 227.
- CABI. 2018. *Cucumis sativus* (Cucumber). <https://www.cabi.org/isc/datasheet/16967> .(diakses 13 November 2018).
- Cabral, J., L.P. Felix & M. Guerra. 2006. Heterochromatin Diversity and its Co-localization with 5S and 45S rDNA Sites in Chromosomes of Four *Maxillaria* species (*Orchidaceae*). *Genetics and Molecular Biology* 29: 659 – 664.
- Chang, Y.C. & C.T. Shii. 2009. Variation in Ribosomal RNA Gene Loci in Spider Lily (*Lycoris* spp.). *Journal of the American Society for Horticultural Science* 134: 567 – 573.
- Chen, J.F., J.E. Staub & J. Jiang. 1998. A Revolution of Karyotype in Cucumber (*Cucumis sativus*). *Genetic Resources and Crop Evolution* 45: 301 – 305.
- Chen, J.F., J.E. Staub, J.W. Adelberg & J. Jiang. 1999. Physical Mapping of 45S rRNA genes in *Cucumis* species by Fluorescence In Situ Hybridization. *Canadian Journal of Botany* 77: 389 – 393.
- Da Silva, C.R., C.C. Quintas & A.L. Vanzela. 2010. Distribution of 45S and 5S rDNA Sites in 23 Species of *Eleocharis* (Cyperaceae). *Genetica* 138: 951 – 957.
- De Melo, N.F. & M. Guerra. 2003. Variability of the 5S and 45S rDNA Sites in *Passiflora* L. Species with Distinct Base Chromosome Numbers. *Annals of Botany* 92: 309 – 316.
- Devi, J., J.M. Ko & B.B. Seo. 2005. FISH and GISH: modern Cytogenetic Techniques. *Indian Journal of Biotechnology* 4: 307 – 315.
- Douet, J. & S. Tourmente. 2007. Transcription of the 5S rRNA Heterochromatic Genes is Epigenetically Controlled in *Arabidopsis thaliana* and *Xenopus laevis*. *Heredity* 99: 5 -13.
- Ganal, M. & V. Hemleden. 1986. Comparison of the Ribosomal RNA Genes in Four Closely Related *Cucurbitaceae*. *Plant Systematics and Evolution* 154: 63 – 77.
- Ganal, M., I. Riede & V. Hembleben. 1986. Organization and Sequence Analysis of Two Related Satellite DNAs in Cucumber (*Cucumis sativus* L.). *Journal of Molecular Evolution* 23: 23 – 30.



- Gibbons, J.G., A.T. Branco, S.A. Godinho, S. Yu. & B. Lemos. 2014. Concerted Copy number Variation Balances Ribosomal DNA Dosage in Human and mouse Genomes. *Proceedings of the National Academy of Sciences Journal*: 1 – 6.
- Grace, O.M., R.R. Klopper, G.F. Smith, N.R. Crouch, E.A. Figueiredo, N. Ronsted & A.E. Van-Wyk. 2013. A Revised Generic Classification for *Aloe* (Xanthorrhoeaceae subfam. Asphodelodeae). *Phytotaxa* 76: 7 – 14.
- Han, Y.H., Z.H. Zhang, J.H. Liu, J.Y. Lu, S.W. Huang & W.W. Jin. 2008. Distribution of the Tandem Repeat Sequences and Karyotyping in Cucumber (*Cucumis sativus* L.) by Fluorescence In Situ Hybridization. *Cytogenetic Genome Research* 122: 80 – 88.
- Hasterok, R., E. Wolny, M. Hosiawa, M. Kowalczyk, K. Sylwia, T. Ksiazczyk, W.K. Heneen & J. Maluszynska. 2006. Comparative Analysis of rDNA Distribution in Chromosomes of Various Species of Brassicaceae. *Annals of Botany* 97: 205 – 216.
- Hoshi, Y., W. Plader & S. Malepszy. 1999. Physical Mapping of 45S rRNA A Gene Loci in the Cucumber (*Cucumis sativus* L.) Using Fluorescence In Situ Hybridization. *Caryologia* 52: 49 – 57.
- Hoshi, Y., K. Yagi, M. Matsuda, H. Matoba, N. Tagashira, W. Plader, S. Malepszy, K. Nagano & A. Morikawa. 2011. A Comparative Study of the Three Cucumber Cultivars Using Fluorescent Staining and Fluorescence In Situ Hybridization. *Cytologia* 76: 3 – 10.
- Iswantari, W., T. Mulyaningsih & A. Muspiah. 2017. Karyomorfologi dan Jumlah Kromosom Empat Grup *Gyrinops versteegii* (Gilg.) Domke di Lombok. *Jurnal Ilmu Kehutanan* 11: 205 – 211.
- Jeffrey, C. 1980. A Review of the *Cucurbitaceae*. *Botanical Journal of the Linnean Society* 81: 233 – 247.
- Julisaniah, N.I., L. Sulistyowati & A.R. Sugiharto. 2008. Analisis Kekerabatan Mentimun (*Cucumis sativus* L.) Menggunakan Metode RAPD-PCR dan Isozim. *Biodiversitas* 9 (2): 99 – 102.
- Kato, A., J.C. Lamb & J.A. Birchler. 2004. Chromosome Painting Using Repetitive DNA Sequences as Probes for Somatic Chromosome Identification in Maize. *Proceedings of the National Academy of Sciences* 101: 13554 – 13559.
- Koo, D.H., Y. Hur, D.C. Jin & J.W. Bang. 2002. Karyotype Analysis of a Korean Cucumber Cultivar (*Cucumis sativus* L. cv. Winter Long) Using C-banding and Bicolor Fluorescence In Situ Hybridization. *Molecules and Cells* 13: 413 – 418.
- Koo, D., H. Choi, J. Cho, Y. Hur & J. Bang. 2005. A High-Resolution Karyotype of Cucumber (*Cucumis sativus* L. Var 'Winter Long') Revealed by C-Banding, Pachytene Analysis, and RAPD-Aided Fluorescence in Situ Hybridization. *Genome* 48: 534 – 540.



- Laimeheriwa, B.M. 2018. Sitogenetika dan Analisis Kromosom. <https://www.researchgate.net/publication/324389934>. Diakses pada tanggal 4 September 2018. Doi: 10.13140/R.G.2.2.32037.60645.
- Lapitan, N.L.P. 1992. Organization and Evolution of Higher Plant Nuclear Genomes. *Genome* 35: 171 – 181.
- Levan, A., K. Fredga & A.A. Sandberg. 1964. Nomenclature for Centromic Position on Chromosome. *Hereditia* 52: 201 – 220.
- Levin, D.A. 2002. The Role of Chromosomal Change in Plant Evolution. Oxford University Press, London.
- Li, K., H. Wang, J. Uwang, J. Sun, Z. Li & Y. Han. 2016. Divergence Between *C. melo* ad African *Cucumis* Species Identified by Chromosome Painting and rDNA Distribution Pattern. *Cytogenetic and Genome Research*: 1 – 6.
- Lodish, H., A. Berk, P. Matsudaira, C.A. Kaiser, M. Krieger, M.P. Scott, L. Zipursky & J. Darnell. 2003. *Molecular Cell Biology*. WH Freeman Publisher, USA.
- Min, H.G., H.T. Ma & G.H. Liang. 1984. *Studies of Genetics*. The MacMillan Company, New York.
- Mondin, M. & L.R. Perecin. 2011. Heterochromatin Patterns and Ribosomal DNA Loci Distribution in Diploid and Polyploid *Crotalaria* species (Leguminosae, Papilionoideae), and Inferences on Karyotype Evolution. *Genome* 54: 718 – 726.
- Nanda, I., M. Fugate, C. Steinlein & M. Schmid. 2008. Distribution of (TTAGGG)_n Telomeric Sequences in Karyotypes of the *Xenopus* Species Complex. *Cytogenetic and Genome Research* 122: 396 – 400.
- Pasolini, P., D. Costagliola, L. Rocco & F. Tinti. 2006. Molecular Organization of 5S rDNAs in Rajidae (Chondrichtyes): Structural Features and Evolution of Piscine 5S rRNA Genes and Nontranscribed Intergenic Spacers. *Journal of Molecular Evolution* 62: 564 – 574.
- Pendas, A.M., P. Moran & G. Vazquea. 1993. Multi Chromosomal Location of Ribosomal RNA Genes and Heterochromatin Association in Brown Trout. *Chromosome Research* 1: 63 – 67.
- Rogers, S.O. & A.J. Bendich. 1987. Ribosomal RNA Genes in Plants: Variability in Copy Number and in the Intergenic Spacer. *Plant Molecular Biology* 9: 509 – 520.
- Sastrosumarjo, S. 2006. *Panduan Laboratorium Sitogenetika Tumbuhan*. IPB Press, Bogor.
- Sato, H., K. Kurozumi & T. Koba. 2007. Karyotype Analysis of a Japanese Cucumber Cultivar by Fluorescence In Situ Hybridization. *Chromosome Science* 10: 65 – 69.



- Setiawan, A.B., C.H. Teo, S. Kikuchi, H. Sassa & T. Koba. 2018. An Improved Method for inducing Prometaphase Chromosomes in Plant. *Molecular Cytogenetics*: 1 – 8.
- Sharma, S. & S. Raina. 2005. Organization and Evolution of Highly Repeated Satellite DNA Sequences in Plant Chromosomes. *Cytogenetic Genome Research* 109: 15 – 26.
- Singh, G. 1999. *Plant Systematics*. Science Publishers Inc, USA.
- Singh, M., R. Kumar, N.S. Nagpure, B. Kushwaha, I. Mani, U.K. Chauhan & W.S. Lakra. 2009. Population Distribution of 45S and 5S rDNA in Golden Mahseer, *Tor putitora*: Population-Specific FISH Marker. *Journal of Genetics* 88: 315 – 320.
- Srivastava, A.K. & D. Schlessinger. 1991. Structure and Organization of Ribosomal DNA. *Biochimie* 73: 631 – 638.
- Sousa, A., A.E.B. Silva, A. Cuadrado, M.V. Alves & M. Guerra. 2011. Distribution of 5S and 45S rDNA Sites in Plants with Holokinetic Chromosomes and the “Chromosome Field” Hypothesis. *Micron* 42: 625 – 631.
- Stace, C.A. 1979. *Plant Taxonomy and Biosystematics*. 2nd Edition. Edward Arnold, London.
- Staub, J., F. Serquen & J. McCreight. 1997. Genetic Diversity in Cucumber (*Cucumis sativus L.*): III. An Evaluation of India Germplasm. *Genetic Resources and Crop Evolution* 44: 315 – 326.
- Suprihati, D., E. Elimasni & Sabri. 2007. Identifikasi Kariotipe Terong Belanda (*Solanum betaceum* Cav.) Kultivar Brastagi Sumatera Utara. *Jurnal Biologi Sumatera Utara* 2: 7 – 11.
- Suryo. 1995. *Sitogenetika*. Gadjah Mada University Press, Yogyakarta.
- Tigano, C., L. Rocco, V. Ferrito, D. Costagliola, A.M. Pappalardo & V. Stingo. 2004. Chromosomal Mapping and Molecular Characterization of Ribosomal RNA Genes in *Lebias fasciata* (Teleostei, Cyprinodontidae). *Genetica* 121: 95 – 100.
- Timmis, J.N., J. Sinclair & J. Ingle. 1972. Ribosomal RNA Genes in Euploids and Aneuploids of Hyacinth. *Cell Differentiation* 1: 335 – 339.
- Trivedi, R. & R. Roy. 1970. Cytological Studies in *Cucumis* and *Citrullus*. *Cytologia* 35: 561 – 569.
- Weiler, K.S. & B.T. Wakimoto. 1995. Heterochromatin and Gene Expression in *Drosophila*. *Annual Review of Genetics* 29: 577 – 605.
- Yang, S., X. Qin, C. Cheng, Z. Li, Q. Lou, J. Li & J. Chen. 2017. Organization and Evolution of Four Differentially Amplified Tandem Repeats in the *Cucumis hystrix* Genome. *Planta*: 1 – 13.



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IDENTIFIKASI SINYAL 45S DAN 5S RIBOSOMAL DNA (rDNA) SERTA SEKUEN DNA BERULANG

TYPE I PADA MENTIMUN

(*Cucumis sativus L.*) ASAL INDONESIA DAN JEPANG

ARI WIBOWO, Dr. Ir. Aziz Purwantoro, M.Sc.

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Zhang, C., K. Shinji & T. Koba. 2012. Karyotype Comparison of Indian and Japanese Cucumber Cultivars by Fluorescence *in Situ* Hybridization Probed with Tandem Repeat Sequences. Chromosome Science 15: 17 – 21.

Zhang, D., Q. Yang, Y. Ding, X. Cao, Y. Xue & Z. Cheng. 2008. Cytological Characterization of the Tandem Repetitive Sequences and Their Methylation Status in the *Antirrhinum majus* Genome. Genomics 92: 107 – 114.

Zhang, Z.T., S.Q. Yang, Z.A. Li, Y.X. Zhang, Y.Z. Wang, C.Y. Cheng, J. Li, J.F. Chen & Q.F. Lou. 2016. Comparative Chromosomal Localization of 45S and 5S rDNAs and Implications for Genome Evolution in *Cucumis*. Genome 59: 1 – 9.

Zhao, X., J. Lu, Z. Zhang, J. Hu, S. Huang & W. Jin. 2011. Comparison of the Distribution of the Repetitive DNA Sequences in Three Variants of *Cucumis sativus* Reveals Their Phylogenetic Relationships. Journal of Genetics and Genomics 38: 39 – 45.