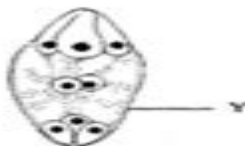


## উচ্চমাধ্যমিক জীববিজ্ঞান ১ম পত্র

## অধ্যায়-১০: উদ্ভিদ প্রজনন



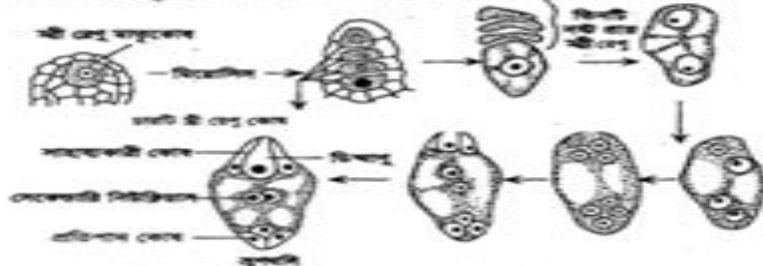
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| ক. | প্রোথ্যাল্যাস কী?  | ১ |
| খ. | পার্বেনোজেনেসিস বলতে কী বোঝ?   | ২ |
| গ. | উদ্ভীপকের 'x' এর সৃষ্টির বিভিন্ন ধাপ চিত্রসহ বর্ণনা করো।             | ৩ |
| ঘ. | উদ্ভীপকে উল্লিখিত চিত্রের বিভিন্ন অংশের নিষেকোত্তর পরিণতি বিবরণ করো। | ৪ |

### ১. নব্বু, জাফোর উত্তর

☛ কার্ণের নিজস্ব বা প্যামিটোকাইটিক পর্ব্বায়ের হৃৎপিণ্ডাকার সবুজ ডান্ডিম দেখাই হলো প্রোথ্যাল্যাস।

**২** নিম্নেরক ছাড়া ভিদ্ভাপু থেকে ত্রুণ সৃষ্টি তথা নতুন জীব সৃষ্টির পদ্ধতিকে পার্বেনোজেনেসিস বলে। বোলতা, মৌমাছি, রটিফার ইত্যাদি প্রাণিদেহে এবং স্পাইরোগাইরা, মিউকার, ফার প্রকৃতি উদ্ভিদদেহে এ ধরনের জনন পরিলক্ষিত হয়। পার্বেনোজেনেসিস দু'প্রকার। যথা- হায়ড্রেট পার্বেনোজেনেসিস ও ভিক্সরেট পার্বেনোজেনেসিস।

৭। উন্নীতকে উন্নীত 'Y' ডিহিত অংশটি হলো শ্রী গ্যামিটোফাইট। শ্রী গ্যামিটোফাইট সৃষ্টির বিভিন্ন ধাপ চিত্রসহ নিয়ে বর্ণনা করা হলো—



চিত্র : শ্রী গ্যারিটোফাইট সন্টিং বিভিন্ন ধাপ

ত্রিভুজের অভ্যন্তরে ত্রুণপোষক টিস্যুর মাঝে একটি ত্রিভুজের ত্রীরেণু যাত্রাকোষ (2n) মিয়োগ্যন বিভাজনের মাধ্যমে চারটি ব্যাগভেদ (n) ত্রীরেণু গঠন করে। এদের মধ্যে ত্রিনটি নষ্ট হয়ে যায় এবং একটি মাত্র কার্যকর থাকে। কার্যকর ত্রীরেণু নিউক্লিয়াসটি মাইটোসিস বিভাজনের মাধ্যমে দুটি নিউক্লিয়াসে পরিণত হয়ে ত্রীরেণু কোষের দু'মেরুতে অবস্থান নেয়। প্রতিটি মেরুর নিউক্লিয়াস পরপর দু'বার বিভাজিত হয়ে চারটি করে নিউক্লিয়াস গঠন করে। ত্রীরেণু কোষটি দু'মেরুস্থ থলির মধ্যে অঙ্গে পরিণত হয় এবং এর প্রতি মেরুতে চারটি করে মোট অষ্টটি নিউক্লিয়াস অবস্থান করে যাকে ত্রুণ থলি বলে। এ অবস্থার দু'মেরু থেকে একটি নিউক্লিয়াস থাক্যানে পরস্পর মিলিত হয়ে সেকেন্ডারী নিউক্লিয়াস গঠন করে। ত্রুণথলির মধ্যে ভিচ্চরাস্ত্রের নিকৈ ত্রিনটি নিউক্লিয়াসের মাধ্যমে বড় নিউক্লিয়াসটিকে ভিচ্চানু, দু'পাশের দুটি নিউক্লিয়াসকে সাহায্যকারী নিউক্লিয়াস এবং ভিচ্চকমূলের নিকৈ ত্রিনটি নিউক্লিয়াসকে প্রতিপাদ নিউক্লিয়াস এবং ত্রুণথলি, ভিচ্চানু, সাহায্যকারী নিউক্লিয়াস, প্রতিপাদ নিউক্লিয়াস ও সেকেন্ডারী নিউক্লিয়াসকে সম্মিলিতভাবে ত্রী গ্যামিটোফাইট বলে। এভাবেই ত্রী গ্যামিটোফাইট সৃষ্টির প্রক্রিয়াটি সম্পন্ন হয়।

যা উল্লিখিত উল্লিখিত চিত্রটি হলো ভিক্ষকের অভ্যন্তরে একটি পূর্ণাঙ্গ অংশটির এর বিভিন্ন অংশের নিম্নোক্তের পরিণতি নিয়ে বিশ্লেষণ করা হলো—

নিষেধকের পর ঝিঝকরপ্ত পরিবর্তিত হয়ে বীজরপ্তে পরিণত হয়। ভিছকনাকী পরিবর্তিত হয়ে বীজনাকীতে পরিণত হয়। ভিছক নাকী পরিবর্তিত হয়ে বীজবৃন্তে পরিণত হয়। এক্সাইন ও ইন্ডাইনে পরিবর্তিত হয়ে যথাক্রমে টেম্পা ও টেমগমেন তৈরি করে। নিষেধকের পরে যুগপোষক বা নিউসেলস নষ্ট হয়ে যায় অথবা পেরিস্পার্মে পরিণত হয়। সসয় নিউক্লিয়াস পরিবর্তিত হয়ে সসয় বা এন্ডোস্পার্ম তৈরি হয়। সাহায্যকারী কোষ এবং প্রতিপালন কোষ নষ্ট হয়ে যায়। নিষেধকের পর গর্ভাশয় পরিবর্তিত হয়ে ফলে পরিণত হয়। গর্ভাশয় প্রাচীর পরিবর্তিত হয়ে তৈরি হয় ফলত্বক। ভিছক পরিবর্তিত হয়ে বীজে পরিণত হয়। ভিছকের বহিঃত্বক বৃণাওরিত হয়ে বীজ বহিঃত্বক এবং ভিছক অন্তঃত্বক বৃণাওরিত হয়ে বীজ অন্তঃত্বক তৈরি করে। ভিছাপু পরিবর্তিত হয়ে তৈরি হয় যুগ। এটি বীজের অভ্যন্তরে থাকে। এভাবে চিত্রের বিভিন্ন অংশ পরিবর্তিত হয়ে ফল তৈরি করে। সশুল্পক উদ্ভিদের জনন কোষ দুটি গঠিত হওয়ার পর এদের মিলন ঘটলে ফুলের গর্ভাশয়টি ফলে এবং ভিছকসমূহ বীজে পরিণত হয়। বীজ উদ্ভিদের বংশ রক্ষা করে এবং বংশ বৃদ্ধি করে। নিষেধকের মাধ্যমে উক্ত পরিবর্তন না ঘটলে ফল ও বীজের সৃষ্টি হতো না। ফলে খাদ্যের অভাবে প্রাণিকুল বিশেষ করে মানবজাতি ক্ষণে হয়ে যেতো।

**প্রশ্ন-২** মাঠে পর্বতের বুনা জাত হতে কাল্পিত বৈশিষ্ট্য আবাদি জাতে স্থানান্তরের মাধ্যমে উচ্চ ফলনশীল ধানের জাত উদ্ভাবন সম্ভব।

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| ক. ভিরিয়ন কী?   | ১ |
| খ. অপ্রাণিচলীয় অঙ্কুর বলতে কী বোঝ?                              | ২ |
| গ. উদ্ভীপকের প্রতিক্রিয়াটি বর্ণনা করো।                          | ৩ |
| ঘ. বর্ণিত প্রতিক্রিয়াটি অর্থনীতি ও বিবর্তনে কীভাবে ভূমিকা রাখে? | ৪ |
| বিবেচনা করো।   |   |

२. मरुत्सङ्गस्य उत्तर

✶ নিউক্লিক অ্যাসিড ও একে ঘিরে অবস্থিত ক্যাপসিড সমন্বয়ে গঠিত এক একটি সংক্ৰমণকম সম্পূর্ণ ভাইরাস কণাই হলো ভিরিয়ন।

**মূল ও কাণ্ডের পেরিসাইকল** স্তর হতে কেন্দ্র পর্যন্ত বিস্তৃত অঞ্চলকে অস্ত্রশিষ্টীয় অঞ্চল বলে। অস্ত্রশিষ্টীয় অঞ্চল পেরিসাইকল, ভ্যাম্বুলার বাডল, মজ্জা ও মজ্জারশি নিয়ে গঠিত। খাদ্য সঞ্চার, খাদ্য ও পানি পরিবহন, দৃঢ়তা প্রদান ইত্যাদি অস্ত্রশিষ্টীয় অঞ্চলের তিস্যুগুচ্ছের প্রধান কাজ।

৭। উদ্ভীপকে উত্তেজিত করা হয়েছে মাঠ পর্বতে কুনোজাত হতে কাকিত বৈশিষ্ট্য আবাদি জাতে স্থানান্তরের মাধ্যমে উচ্চ ফলনশীল ধানের জাত উদ্ভাবন সম্ভব। সুতরাং উদ্ভীপকে ইঞ্জিত করা প্রতিঘটি হলো কৃত্রিম সংকরায়ন।

উত্তরের বাকি অংশ সৃজনশীল ও এর 'গ' নং প্রশ্নোত্তর দেখো।

১৬ উন্নীতকে বহির্ভূত প্রক্রিয়াটি প্রকৃতপক্ষে কৃত্রিম সংকরায়ন প্রক্রিয়া। এ প্রক্রিয়াটি আমাদের অবনীতি ও বিবর্তনে বিভিন্নভাবে গুরুত্বপূর্ণ ভূমিকা রাখে।

উত্তরের বাকি অংশ সৃজনশীল ও এর 'খ' নং প্রশ্নের দেখো।

**গুরুত্বপূর্ণ:** নিম্নলিখিত অবস্থায় পরাগায়ন ঘটিয়ে বর্তমান জাতের ফসল হতে উন্নত জাতের ফসল প্রকটের সম্ভাব। /জি.সি. ২০১৮

- ক. ত্রিমিলন কী? ৩  
 খ. পার্থেনোজেনেসিস বলতে কী বোঝ? ৫

বাকী পৃষ্ঠাগুলি নিচের লিঙ্কে ক্লিক করে ডাউনলোড করে পড়ুন।

# Hsc Chapter Reproduction In

**Clifford Lane**



## **Hsc Chapter Reproduction In:**

**Handbook of Stem Cells, Two-Volume Set** Robert Lanza, Catherine Verfaillie, Irving Weissman, Michael D. West, Helen Blau, John Gearhart, Brigid Hogan, Douglas Melton, Malcolm Moore, Roger Pedersen, E. Donnall Thomas, James A. Thomson, 2004-10-05 New discoveries in the field of stem cell research have frequently appeared in the news and in scientific literature Research in this area promises to lead to new therapies for cancer heart disease diabetes and a wide variety of other diseases This two volume reference integrates this exciting area of biology combining the prerequisites for a general understanding of adult and embryonic stem cells the tools methods and experimental protocols needed to study and characterize stem cells and progenitor populations as well as a presentation by the world s experts of what is currently known about each specific organ system The editors of the Handbook of Stem Cells include Robert Lanza Helen Blau John Gearhart Brigid Hogan Douglas Melton Malcolm Moore Roger Pedersen E Donnall Thomas James Thomson Catherine Verfaillie Irving Weissman and Michael West The Editorial Board includes W French Anderson Peter Andrews Anthony Atala Jose Cibelli Giulio Cossu Robert Edwards Martin Evans Elaine Fuchs Margaret Fuller Fred Gage Richard Gardner Margaret Goodell Ronald Green William Haseltine Joseph Itskovitz Eldor Rudolf Jaenisch Ihor Lemischka Dame Anne McLaren Richard Mulligan Stuart Orkin Martin Pera Benjamin Reubinoff Janet Rossant Hans Scholer Austin Smith Evan Snyder Davor Solter Alan Trounson and Leonard Zon This comprehensive set should be a much needed addition to the library of students and researchers alike Provides comprehensive coverage on this highly topical subject Contains contributions by the foremost authorities and premiere names in the field of stem cell research The accompanying CD ROM includes over 250 color figures

**HSC Personal Development, Health and Physical Education** Damien Davis, Tom Kimmel, 1993 Crop Production Aakash Goyal, Muhammad Asif, 2013-07-03 Humans are depended on crops for food fibber and more recently for fuel Demands for crop production in rising because of increasing population change in food habits and biofuel consumption The book focus on challenges progress and prospects of crop production It comprises of vast array of topics including latest agronomics practices for different crops to enhance productivity mitigate the challenges imposed by climate change improve water use efficiency factors controlling dormancy optimum use of fertilizers etc This volume will serve as an excellent resource for students and researchers interested and working in the area of sustainable crop production *Stem Cell Biology in Normal Life and Diseases* Kamran Alimoghaddam, 2013-05-08 Stem cells have a prominent role in normal life and also in pathogenesis of disorders Today these cells are clinically applicable in hematopoietic stem cell transplantation but expansion of their application in many more disorders needs more work For safe and effective application of these cells we need better knowledge of their biology their interaction with other cells especially supporting niche cells growth maturation and also immigration of stem cells through body in normal and abnormal conditions Also for clinical application we need to understand better their separation methods and safe manipulation This book is written to clarify some aspects of stem cell

biology their characteristics assessment of damage to cells during ex vivo manipulation and also their role in a model of cancers chronic myeloid leukemia      *Stem Cell Anthology* ,2009-10-22 The fields of stem cell research regenerative medicine tissue engineering and cloning are very closely related It is important for researchers in each of these disciplines to be aware of the methods and principles in the others Elsevier publishes some of the highest individual references in these areas Bringing together the principles applications and basic understanding in these related areas of science will provide a new reference which is serve the needs of a variety of researchers Edited by Dr Bruce Carlson Stem Cell Anthology will be valuable to researchers and students who need to save time and link concepts to principles applications and methods in order to work more effectively and see links for potential collaborations Includes a collection of chapters by leaders in the stem cell field including the first researchers to discover iPS cells and multiple Nobel Laureates Provides the most detailed introduction to basic properties of major embryonic and adult stem cells by highlighting breakthrough discoveries in the nervous system spinal cord heart pancreas epidermis musculo skeletal retina leading areas of stem cell research in human application Details technical laboratory set up for practitioners technicians and administrators      **ACI Manual of Concrete Practice** American Concrete Institute,2002      *The Intrinsic Value of Endangered Species* Ian A. Smith,2016-01-08 Why save endangered species without clear aesthetic economic or ecosystemic value This book takes on this challenging question through an account of the intrinsic goods of species Ian A Smith argues that a species intrinsic value stems from its ability to flourish its organisms continuing to reproduce successfully and it avoiding extinction which helps to demonstrate a further claim that humans ought to preserve species that we have endangered He shows our need to exercise humility in our relations with endangered species through the preservation of their intrinsic goods which in turn rectifies our degradation of their importance Unique in its appeal to virtue ethics and to species concepts The Intrinsic Value of Endangered Species is an important resource for scholars working in environmental ethics and the philosophy of biology      **Programme Et Résumés Des Communications Du Congrès Annuel** Canadian Federation of Biological Societies,Canadian Federation of Biological Societies. Meeting,1980      **Handbook of Stem Cells** Robert Paul Lanza,2004 Accompanying CD ROM in v 2 has image collections which can be saved in PowerPoint or HTML      **Essentials of Stem Cell Biology** Robert Lanza,John Gearhart,Brigid Hogan,Douglas Melton,Roger Pedersen,E. Donnall Thomas,James A. Thomson,Ian Wilmut,2009-06-05 First developed as an accessible abridgement of the successful Handbook of Stem Cells Essentials of Stem Cell Biology serves the needs of the evolving population of scientists researchers practitioners and students that are embracing the latest advances in stem cells Representing the combined effort of seven editors and more than 200 scholars and scientists whose pioneering work has defined our understanding of stem cells this book combines the prerequisites for a general understanding of adult and embryonic stem cells with a presentation by the world s experts of the latest research information about specific organ systems From basic biology mechanisms early development ectoderm mesoderm endoderm methods to application of stem

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