

SCIENCE FAIRS	01	02	03	04	05	06	07
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Life sciences

Project ideas

Animal biology

The anatomy of molluscs
 The anatomy of birds
 Urban birds
 Why do some birds migrate while others do not?
 Palmipeds
 Body types
 Abnormal body types
 Muscular contraction in frogs
 Cutaneous respiration in frogs
 The physiology of tree frogs
 The many uses of elephant trunks
 Highly developed incisors as a form of defence
 Why eviscerate game animals?
 Edible animal viscera
 The anatomy of spiders
 The well organized ant society
 Communication among insects
 Insects' ability to protect themselves from the cold
 The life cycle of yellow jacket wasps
 Butterfly reproduction
 Reptile classification
 Ichthyosaurus—gone and forgotten
 Why do snakes shed their skin?
 The origin of cetaceans
 Sounds of cetaceans
 Why do whale tails have a horizontal axis?
 Aerial, aquatic and land mammals
 Primates
 Myxomatosis in rabbits
 Creutzfeld-Jacob disease and mad cow disease
 Parrot fever
 Gid—an unusual disease
 Blood circulation
 Animal blood
 Animal digestion (piscivores, carnivores, owl pellets)
 Why are amphibians able to live on land and in water?
 Ovoviviparity
 Oviparous vs. viviparous animals
 Hermaphrodites

SCIENCE FAIRS	01	02	03	04	05	06	07
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Why are there methane hydrates on the ocean floor?
 Oyster culture
 Aquaculture
 Mussel culture
 The work of fish farmers
 The zebra mussel—a filtering organism
 The capacity of zebra mussels to store inorganic pollutants
 Gastropods
 Cephalopods
 Bivalves
 Psittacines: the parrot family

General biology

Cell function
 The process of cell adhesion
 Myeloblast
 In-vitro fertilization
 The different embryonic stages
 Chicken embryos
 Tapeworms
 Eelworms vs. flatworms
 Energy production inside chloroplasts
 ATP liposomes
 Embryonic stem cells
 Comparing two breast cancer tissue staining techniques
 Cryonics
 Herbicides
 Pesticides
 Parasitic worms
 Plant parasites
 Malaria
 The fermentation process
Stachybotry chartarum—a harmful black mould
 Phytophthora
 The bactericidal effect of commercial acne lotions
 Is antibacterial soap more effective than regular soap?
 Which disinfectant is the most effective?
 Group A streptococcus or flesh-eating bacteria
 Bacteria
 Ice-forming bacteria
 The bacteria *Neisseria meningitidis*
 Bacterial resistance
 Meningococcus
 Epidemics
 Viruses

SCIENCE FAIRS	01	02	03	04	05	06	07
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Can viruses be used in war?
The Ebola virus
Virus strategies for entering cells
Cold viruses
The work of virologists
Rabies in animals and humans

Human biology

The anatomy of the brain
The anatomy of the heart
The structure of the eye
The anatomy of the ear
The anatomy of the skin
The anatomy of the teeth
Malformations and deformities
Muscular contractions
Muscle asthenia
Myopathy
Osteritis
Osteosynthesis
Organ transplantation
Do the elderly have problems with insomnia?
Strict hygiene decreases the risk of infection in children
How different classes of antibiotics work
Vaccines
Acquired immunity vs. innate immunity
Immunotransfusion
The phenomenon of rejection in the field of organ transplantation
What is cancer?
Skin cancer
Is there a link between psychology and the neurological and immune systems in the onset of cancer?
Is aspartame a carcinogen?
The effects of vitamin D and calcium on the growth of cancerous skin cells
Do sunscreens really provide effective protection against skin cancer?
The effects of Creutzfeld-Jacob disease and mad cow disease on humans
The pathological aspects of Siamese twins
Uterine myoma
Scoliosis
Osteoporosis
Dandruff
Physiological reactions to different drugs
The physiology of the brain
The physiology of the liver

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Hypnosis: entertainment or science?
 The physiological effects of music on humans
 How the brain analyzes and interprets information captured by the retina
 The effects of electrical and magnetic fields on nerve impulses
 The steps involved in memorization
 Hemispheric synchronization
 Myelin
 The stages of sleep
 The role of the sense of smell
 The role of sense of smell in love
 What is Alzheimer's disease?
 The neuromodulation properties of Ginkgo biloba
 Voluntary motor control
 Muscles involved in locomotion
 Neuron functions
 The different nerves and their roles
 The elements of nerve tissue
 Cerebral hemorrhage
 Congenital heart malformation
 The mechanism of cardiac contraction
 Cardiac catheterization
 Arterial blockage
 Artificial blood
 High cholesterol
 Blood circulation
 Varicose veins
 Anemia
 The role of hormones
 Different types of glands
 What happens when the thyroid malfunctions?
 The importance of the pituitary gland
 The different kidney diseases
 Renal colic
 Why can hemodialysis replace kidneys?
 Food allergies
 The immune system
 AIDS
 Serology and serotherapy
 The elements of the mouth essential to the proper functioning of the digestive system
 Digestion
 Fermentation
 Harelip
 Factors that influence hunger
 The effectiveness of toothpastes
 How do the organs of the digestive system work?
 How to keep food fresh

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Fatty acids
 Vitamin C in fruits and vegetables
 Dehydrated food
 Using fish skin to manufacture gelatin
 Food additives
 The diabetic diet
 The process of elimination
 Mating
 The mysteries of life
 Herpes
 Understanding STDs
 Testing for STDs
 How does the contraceptive pill work?
 The organs of the reproductive system
 Gemellity and multiple births
 The causes of infertility
 What happens when we drown?
 Hyaline membrane disease (HMD) or respiratory distress in newborns
 How do the lungs work?
 Asthma
 Inhalation and exhalation
 The different respiratory disorders
 The malfunctioning of certain organs resulting from Guillain-Barré syndrome
 Thanatopraxis
 The medicolegal study of circumstances resulting in death
 The various drugs in sports
 The world of narcotics
 The phenomenon of dependence
 Toxic substances in cigarettes

Plant biology

The pitcher plant—an indigenous carnivorous plant
 The study of leaf veins
 The classification of grape varieties
 Wine growing in Quebec
 Does a green plant change colour if exposed to coloured light?
 What is photosynthesis?
 Photosynthesis in green plants and algae
 Can a plant in an enclosed environment satisfy its own needs?
 The nitrogen, phosphorous and potassium needs of beans
 How does the *Mimosa pudica*—commonly known as the sensitive plant—react to stimuli?
 The effects of carbon dioxide on the foliar respiration of plants
 Forget-me-nots
 Hydroponics
 Using computers to grow cacti

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Ivory plants
 Phototaxis
 Sac fungi
 Edible mushrooms
 Germination
 The role of stamens and pistils
 Protogyny is less common than protandry
 Plant phyllotaxis
 Asexual reproduction
 Phylloxera
 Phytosanitary products
 Pest control products

Biochemistry

Nucleic acids
 Deoxyribonucleic acid
 The molecular structure of DNA
 Using the structure of DNA to solve computer problems
 Dinosaur DNA
 The Ames test
 DNA methylation
 Tracing a criminal
 DNA testing
 The importance of a research protocol
 Micromanipulation
 Gene therapy
 The gene that determines eye colour according to Mendel's theory
 The development of genetic or hereditary diseases
 Hereditary diseases
 Predicting the colour of a colt
 Winter wheat has genes that provide resistance to cold
 The biochemistry of love at first sight
 Does the addition of a ubiquinone molecule affect energy production?
 Enzymes
 How can a small organic molecule attached to an enzyme activate it?
 Enzyme washing
 The fermentation of milk
 The constituents of living matter, from amino acids to cells
 Interactions between antioxidants and free radicals
 Cell apoptosis
 Proteins known as "molecular chaperones"
 Using liposomes to encapsulate a drug
 The biochemical effect of cholesterol

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Medicine and health sciences

How do allergies develop?
 Some people can die from a bee sting!
 Types of anesthesia
 How do anesthetics work?
 Cochlear implants
 Hearing aids
 Myocarditis
 Heart transplants
 Balloon angioplasty
 Porphyria—the basis of the vampire legend
 Manipulations of the vertebral column
 Bone marrow transplant
 What is a graft?
 Does all surgery involve risk?
 Xenotransplantation (transplanting animal cells, tissues or organs into humans)
 Osteoclasia
 Splenectomy
 Xylitol to the rescue of oral bacteria
 Why grow molars if they have to be removed?
 Devitalization
 The effectiveness of toothpastes
 Types of grafts for burn victims
 Skin grafts
 Discomforts associated with psoriasis
 Albinism
 Diet for cardiac patients
 Desserts for diabetics
 Food combinations
 The Montignac diet
 Prosthetic devices—a bonus for disabled people
 Learning to live with one less limb
 Stomach ulcers
 Gastritis
 Colitis or inflammation of the colon
 Crohn's disease
 Dysentery
 The symptoms of senility
 Gerontism or premature aging in children
 Is the "big operation" inevitable?
 The phenomenon of hot flashes
 Menopause
 Premenstrual syndrome (PMS)
 The menstrual cycle
 The different blood types

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Dealing with hemophilia
 Detecting diseases of the blood
 Animal castration
 Artificial insemination of livestock
 Reflexology
 Music therapy
 Iridology
 Naturopathy
 Acupuncture
 Homeopathy
 Should a brain tumour be operated on?
 Lobotomy
 The consequences of a spinal cord lesion on the nervous system
 Cerebral paralysis
 Reflex sympathetic dystrophy
 Spina bifida
 Treatment in a hyperbaric chamber
 Spinal cord myelitis
 Miscarriage
 Midwives vs. obstetricians
 The miracle of birth
 Premature births
 Eye diseases
 Ophthalmoscopy
 Eye pathologies
 Photophobia
 Optometer
 Hypermetropia and myopia
 Corneal lenses
 How do braces work miracles?
 The menisci
 An artificial hip
 How fractures are repaired
 Recurring tendonitis
 Minimal pairs—an excellent learning method for children
 Dystonia
 Strabismus
 Ametropia
 Hematotympanum, mumps and other ear problems
 Laryngotomy
 Treating tonsillitis
 Meningitis kills children
 Analgesics
 The placebo effect
 Can liposomes help eliminate pain?
 Aricept and Alzheimer's disease

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Is Viagra really a miracle drug?
 Hormone therapy
 Neovastat—an experimental drug made from shark cartilage
 The work of physiotherapists
 Can garlic act as an antibiotic?
 Jerusalem artichoke has properties that are beneficial for diabetics
 The steps involved in bottling flowers as perfume fragrances
 Onions, ginger and Echinacea against *E. coli*
 What is pneumoconiosis?
 The different pulmonary diseases
 Do orthotics in shoes really help?
 Ingrown toenails
 Athlete's foot
 Why is proctoscopy performed?
 An artificial anus
 Autism
 Schizophrenia
 How does radiation therapy work?
 Myelography
 Urography
 Myoelectric prosthesis
 The benefits of electrotherapy
 Rehabilitation for paraplegics
 Rheumatism
 Rheumatoid arthritis
 Arthritis
 Osteoarthritis
 Genitourinary diseases