

Winners of R&E Science Fair

Awards	Titles	Names(Schools)
Gold	Quantitative analysis of autumn maple leaf color	WooJeong Choi, HyunJoon Jang, WoinGyung Choi, JinWook Chae, SangHyeon Joo (Daejeong Science High School for the Gifted)
	Reconfiguring the road network to improve the average speed and density of the vehicle	HyunBo Shim, YuChan Choi (Gyeonggi Science High School for the Gifted)
	Study of medical Ti-Ta-Zr alloy using nanoindentation	MiSeon Yang, Daniel Yoon (Gyeonggi Science High School for the Gifted)
	Synthesis of TiO ₂ based Organic-inorganic Hybrid Photocatalyst	ByeongSeok Bae, HyunJi Yun (Gyeonggi Science High School for the Gifted)
	Uniform Number in High-Dimensional Ladder Lotteries	YoungWoo Kye, JiHoon Park, HaKyung Jang (Gyeonggi Science High School for the Gifted)
Silver	A Study on the Effectiveness of the Strategy of the Three-Person Normal-Form Game on a Hexagonal Grid	Minjae Kim, Chanhyeok Lee, Mingyu Sim (Gyeonggi Science High School for the Gifted)

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Silver	Analysis on the Distribution of Bacteria in Reservoir Environment	YooNa Kim, SooHyun Kim, JunSeo Jang (Gyeonggi Science High School for the Gifted)
	Anti-cancer effects of substances extracted from Avocados through PEEF (ethyl acetate)	YeSong Jeong, KyungHee Lee (Sejong Science High School)
	A study of how to detect more protease from Nepenthes	JunYoung An, MinJu Kim, JuYoon Kim, Jewoong Jang (Incheon Academy of Science and Arts)
	Creating visual coding math application using programming language	JiWhan Kim, GyungTaeg Kim, JaeWoo Shin, HyeongJun Cho (Incheon Academy of Science and Arts)
	Development and Implementation of Digital Signature Technique Using Cube	DongHwa Ji, Jubin Kim (Gyeonggi Science High School for the Gifted)
	Elaborately Modified BiVO ₄ Photoanodes for Solar Water Splitting	KyungWook Lee, JiWon Heo (Gyeonggi Science High School for the Gifted)
	High efficient PDMS, PTFE Triboelectric energy harvesting cell	SangHyuk Kim, ByeongJun Lee, JinSeok Lee, YoonChul Ju, JinWoo Cha (Gyeonggi Science High School for the Gifted)

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Silver	Optimization of electricity-generating ability of piezoelectric element attached shoes	YooChan Jeong, YeJun Jung, JunHak Lee (Gyeonggi Science High School for the Gifted)
	Stabilization of Inverted pendulum by vibration of the axis with nonlinear controller	DoHyun Ahn, YeongMin Park (Gyeonggi Science High School for the Gifted)
Bronze	Analysis of Crude Saponin Content by Type of Tea	Kuhn Yoon, TaeWoo Kim, EoJin Choi (Gyeonggi Science High School for the Gifted)
	Analysis of the period of Chaotic system based sequence	DaeHyung Kim, HanWon Choi (Gyeonggi Science High School for the Gifted)
	Characteristics of the Urban Heat Island in Daejeon Region According to the Nature of the Surface	RyangHyun Kim, InHo Yeo, TaeWon Yun, DoYoon Lee (Daejeong Science High School for the Gifted)
	Changes of angular velocity in robot using a righting reflex of cats	Jaywon Kim, Jaewon Lee, In Sung Jung (Gyeonggi Science High School for the Gifted)
	Compressing YOLO via Quantization and Pruning	Junu Kwon, JiHoon Chang (Gyeonggi Science High School for the Gifted)
	Effect of Circadian Disruption from Day Length Regulation on Growth and Mating of <i>Drosophila melanogaster</i>	JiMin Lim, TaeWoo Park, HyukJin Yoon (Gyeonggi Science High School for the Gifted)

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Bronze	New lower bound of $R(C_4, K_{11})$	SuMin Kim, JaeHoon Shin (Gyeonggi Science High School for the Gifted)
	Study on the Skin Penetrating Peptide (SPP) Design using Antimicrobial Peptide (AMP)	MinJu Kim, SeoJin Kim (Gyeonggi Science High School for the Gifted)
	Synthesis of Amine-functionalized Microporous Organic Polymer and their application to Noble Metal Recovery	SeoYeon Kim, InSeong Hwang (Gyeonggi Science High School for the Gifted)
Appreciation	Analysis and System Development of the Prediction Model for Spread of Epidemiology Using SEIR Model	YunJong Kim, GeonU Lee (Gyeonggi Science High School for the Gifted)
	Analysis and Consideration of Bioplastic	SunHo Gi (Taesung High School)
	A Study on the Mathematical Solution Using Hermite Collocation Method in the Modified SEIR Model for COVID-19 Spread Prediction Analysis	Geon Park, JaeHyuk Cha (Gyeonggi Science High School for the Gifted)
	CAR-T Cell Immunotherapy Using Metabolic Labeling	YoungJin Kim, InHwan Jung, ChangHa Lee (Korea Science Academy of KAIST)
	Elimination of Caffeine Using Aronia, Persimmon and Chamomile	ChaeEun Won, Munsu Lee, JiHun Hyeon (Gyeonggi Science High School for the Gifted)
	Mathematical Approach of Experimental Traffic Capacity Measurement Techniques	WooJun Jeong, JongHyeok Lee (Gyeonggi Science High School for the Gifted)

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Appreciation	Sensitivity Optimization of Improved Octa-Sectored Metamaterial Absorber	SeoJun Lee, HyukGyu Song, DongHun Lee (Gyeonggi Science High School for the Gifted)
	Study for an efficiency improvements for folding screen type solar panels model that recycles reflected light and making optimal models	JongYun Kim, HyeonJung Kim, ShineWoo Ro (Gyeonggi Science High School for the Gifted)
	The Control of -1 Ribosomal Frameshifting in Yeast Cells	YuJin Jung, JoonHo Ahn (Gyeonggi Science High School for the Gifted)