



Department of
Pharmaceutics and Regulatory affairs

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Sri Adichunchanagiri College of Pharmacy
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*Lilly's Formula: Speed, Science &
Strategy in Obesity Care*



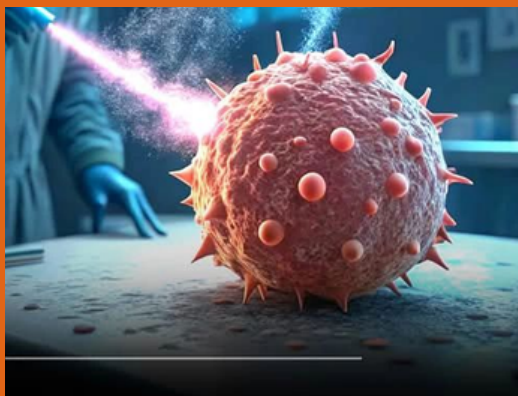
PERSONALIZED HEALTH MONITORING

- Nasal Respiratory Fingerprints
- Miniature wearable device
- The recent innovations in field of Biometric and Diagnostic Markers



Laser Precision Meets Zero Gravity: Painting Cancer's Defeat in Light and Space

- **AI-Guided Laser System Targets Tumors with Precision**
- **This innovation could redefine surgery, offering scalpel-free, bloodless procedures with enhanced tumor removal, especially in challenging areas.**



REGULATORY UPDATES FORUM

Eli Lilly's Obesity Playbook



Eli Lilly's Bold Strategy to Lead the \$95B Obesity Market

Eli Lilly is aggressively positioning itself as a global leader in obesity care with a focused three-strategy. First, the company has drastically reduced its average drug development time—from years to just 6—accelerating its innovation pipeline. A key highlight is orforglipron, an upcoming oral obesity drug poised to rival popular injectables like Ozempic by offering patients a more convenient and potentially affordable alternative. Additionally, Lilly is expanding beyond GLP-1 based therapies with candidates like bimagrumab, which targets fat loss while preserving muscle mass. This diversified approach reflects Lilly's ambition to reshape the future of obesity treatment through speed, accessibility, and broader therapeutic impact.

Zero Gravity, Maximum Impact: A New Era in Cancer Drug Testing"

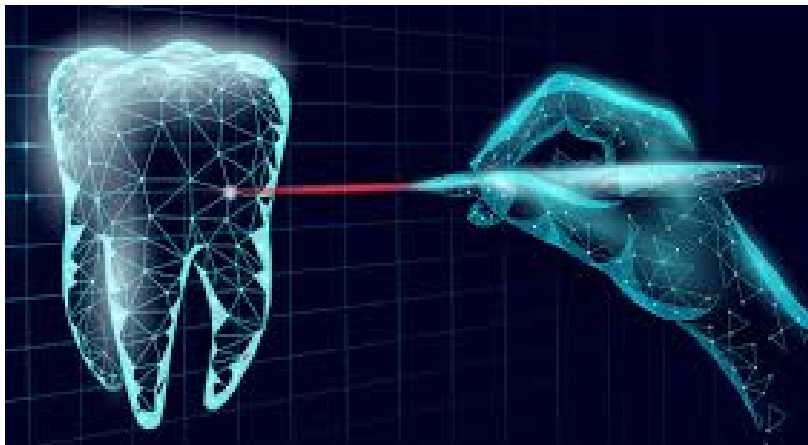
UC San Diego Tests Next-Gen Cancer Drug in Microgravity. UC San Diego researchers are pioneering a NASA-funded mission aboard the International Space Station to test rebecsinib, a novel ADAR1-targeting cancer drug, against ovarian, breast, leukemia, and glioblastoma tumors. Microgravity accelerates tumor growth—organoids can triple in size in just 10 days—offering a rapid, stress-enhanced environment to evaluate drug efficacy.

Early studies aboard Axiom missions have shown rebecsinib halts cancer organoid growth. The current two-week ISS experiment uses patient-derived samples, aiming to fast-track insights for Earth-based clinical trials. Future missions plan to explore non-invasive drug formats like pills, potentially revolutionizing oncology drug development and accessibility.



AI-Guided Laser Targets Cancer Cells with Surgical Precision

In a groundbreaking development, scientists at a Swiss biomedical research facility have engineered an advanced, AI-guided laser system capable of eliminating individual cancer cells with sub-micron precision—without harming surrounding healthy tissue. Central to this innovation is a femtosecond laser that emits ultra-short light pulses to vaporize targeted cells. Unlike traditional lasers that risk damaging nearby tissue, this system is integrated with a deep-learning AI that uses real-time fluorescence and hyperspectral imaging to map tumor boundaries at the cellular level. Once cancer cells are identified, the AI adjusts the laser's pulse timing, intensity, and focus to ensure precise targeting. Clinical trials on brain and pancreatic cancer tissues have shown 99.3% accuracy with no collateral damage. This cutting-edge approach offers a scalpel-free, bloodless alternative to conventional surgery, particularly in delicate or hard-to-access areas. Patients may benefit from shorter recovery times, reduced anesthesia, and lower chances of tumor recurrence. This innovation marks a major step forward in precision oncology and could redefine the future of cancer treatment.



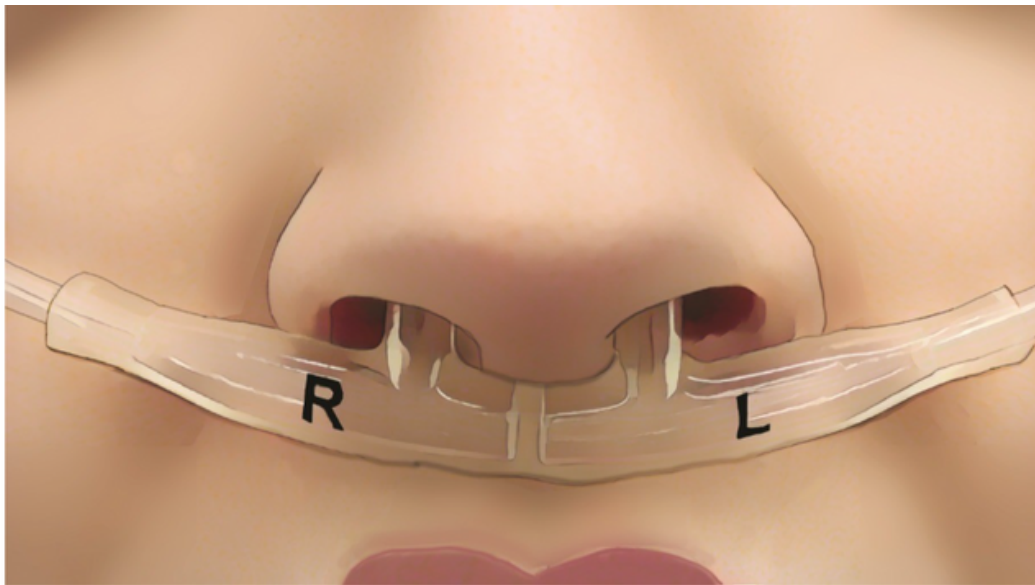
The fusion of artificial intelligence (AI) and robotics—termed “dentronics”—is reshaping laser dentistry by enhancing diagnostic accuracy, treatment precision, and overall patient outcomes. AI enables early detection of conditions like caries and oral cancer through rapid analysis of imaging data, while AI-guided femtosecond lasers deliver superior precision in minimally invasive procedures with reduced tissue damage. Breakthroughs such as micro/nanorobots and Catalytic Antimicrobial Robots (CARs) are enabling targeted therapies and effective biofilm removal in complex areas of the oral cavity. Despite the promise, challenges remain in safeguarding patient data, addressing algorithm bias, and ensuring regulatory compliance—highlighting the need for responsible integration of AI in dental care.



- Recent trials show that AI-assisted laser systems reduce treatment time for periodontal procedures by up to 30%.
- They enhance precision in enamel ablation and cavity preparation with minimal tissue damage.
- Leading institutions like MIT, ETH Zurich, and NYU Dental School are pioneering this technology.
- The integration of AI boosts both diagnostic speed and treatment accuracy.
- This advancement marks a major shift toward minimally invasive, patient-friendly dentistry.

TUBES BENEATH THE NOSE MEASURE AIRFLOW

Recent advancements in respiratory monitoring have enhanced the accuracy and comfort of airflow measurement using nasal cannula-based technologies. Tubes placed beneath the nose, often integrated into lightweight nasal cannulas, are now equipped with high-sensitivity pressure transducers or thermistors that detect subtle changes in airflow during breathing. These systems are widely used in sleep studies, especially for diagnosing sleep apnea, and are now being adapted for portable, real-time monitoring in both clinical and home settings. Modern designs focus on minimizing patient discomfort while improving signal fidelity. Innovations include wireless connectivity, AI-driven signal processing, and integration with wearable sensors to track multiple respiratory parameters simultaneously. Some advanced devices also incorporate CO₂ sensors for capnography, providing deeper insights into ventilation efficiency. Overall, these unobtrusive, tube-based systems beneath the nose represent a critical shift toward continuous, noninvasive respiratory monitoring, enabling better diagnosis and management of respiratory and sleep-related disorders.



RECENT INNOVATIONS IN THE FIELD OF "TUBES BENEATH THE NOSE" FOR MEASURING AIRFLOW

Recent innovations in nasal airflow monitoring have significantly advanced the use of tubes placed beneath the nose, particularly in sleep and respiratory medicine. These tubes, commonly part of nasal cannula systems, now integrate miniaturized pressure transducers or thermistors that can detect even subtle airflow variations during inhalation and exhalation.

Key innovations include: