

biotechne®

Custom Reagents & Contract Services



Leverage Bio-Techne's legacy of scientific innovation to advance your research.

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Serving your specialized needs with Expertise and Communication

When your work demands unique reagents or scientific support, turn to the decades of product development legacy behind Bio-Techne's trusted brands. Together with a dedicated project manager, our expert scientists, quality assurance team, and world-class technical support we will deliver solutions exactly tailored to bring you success faster and more economically.

Bio-Techne is a global life science company providing innovative products and resources for the research and clinical diagnostic communities. Our expertise across three operating divisions spans laboratory research, preclinical and clinical studies, and reagents for manufacturing therapeutic and diagnostic tests, makes us uniquely suited to ensure your custom solution is delivered successfully.

Benefits of Custom Services from Bio-Techne

- ✓ Scientific expertise
- ✓ Consistency
- ✓ Supply
- ✓ Large-scale production
- ✓ Regulatory support
- ✓ Quality results
- ✓ Timeliness
- ✓ ISO-certified Quality Management System and FDA registered
- ✓ Cost savings
- ✓ Confidentiality
- ✓ Dedicated project managers

What You Can Expect

- ✓ Identify the need
- ✓ Consult with our experts
- ✓ Refine the project specifics, milestones, and deliverables
- ✓ Review a statement of work
- ✓ Receive regular project updates
- ✓ Accept delivery of custom product or service

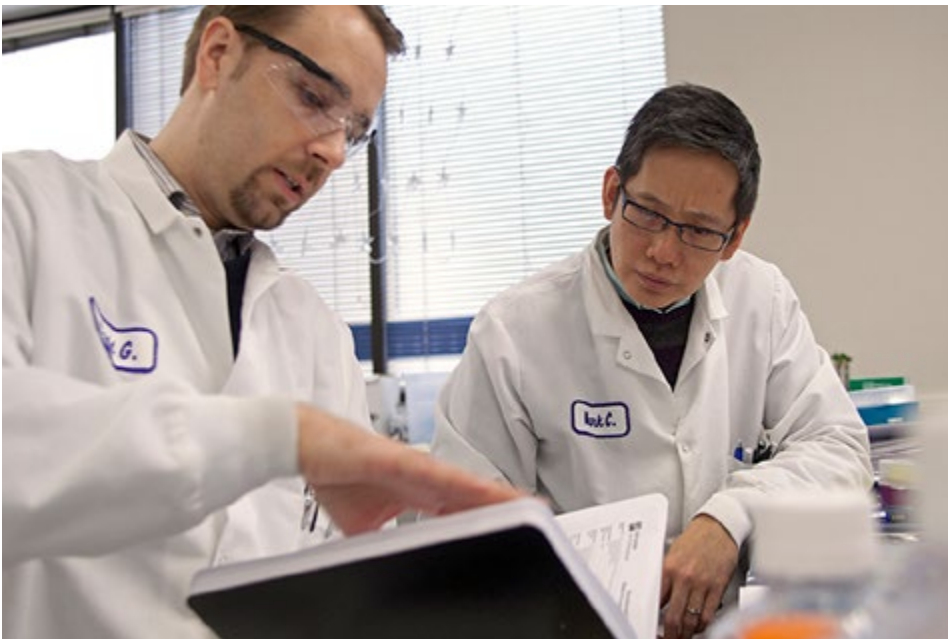
Learn more | rndsistemas.com/services

Bio-Techne's Quality Philosophy

Setting the standard in quality research reagents and support for over 30 years.

In biomedical research, the Bio-Techne brands are synonymous with quality. To us, quality is not only about producing consistent, reliable, and highly active products, it is about a mindset that puts the needs of the scientific research community first. At Bio-Techne headquarters in Minneapolis, USA, this mindset is embedded into our culture through the high-level scientists we employ and the thriving biomedical research environment that surrounds us. It is supported not only by the stringent production standards and control testing performed on our products, but also the prestigious research articles that feature our products.

All of our custom products and contract services are **governed by rigorous quality assurance measures**, so you can be confident in the accuracy of the data and the performance of our custom products. Work performed within **our FDA-regulated facility** means that you can move seamlessly into regulatory agency submissions with Bio-Techne's regulatory affairs team as a partner. Importantly, our manufacturing facilities ensure that, following the success of your initial research, **we can provide large-scale amounts of critical, specialized reagents to assure your continued success.**



Our policies conform with the requirements of the Code of Federal Regulations (21 CFR 820); Quality System Regulations for Medical Devices, ISO 13485:2003 Standard and ISO 9001:2008 Standard, the In Vitro Diagnostic Directive 98/79/EC and the Canadian Medical Device Regulations.

Learn more | rndsystems.com/quality

Apply the experience of the scientists behind the industry's best proteins to your research.

History

Since 1985, R&D Systems has produced gold-standard proteins to meet the strictest development and purification standards.

Expertise

Our scientists have developed methods to express and purify some of the most challenging proteins with the highest bioactivities on the market.

Delivery

We will produce exactly what you need and provide a test sample. If it meets your requirements, we will scale up production to meet your research and development needs.

R&D SYSTEMS
a biotechnne brand

Protein Services

Available Services

- ✓ Recombinant protein expression and purification (with typical high purity, high bioactivity, and low endotoxin levels)
- ✓ *In vitro* protein modification and processing
 - Biotinylation
 - PEGylation
 - Fluorescent probe labeling
 - Incorporation of non-standard chemical labels
- ✓ Point mutations
- ✓ Animal Component-Free Process, Animal-Free™, & GMP-grade
- ✓ Formulation to your requirements
- ✓ Hundreds of unique, non-catalog items available



Learn more | rndsystems.com/custom-proteins

Harness the unique experience and expertise of the R&D Systems Quantikine ELISA team

Assay Services

Available Services

- ✓ Antibody matched pair screening
- ✓ Assay development and optimization
- ✓ Complete ELISA kit manufacturing
- ✓ Precision automated microplate coating
- ✓ Translation to automated platforms
- ✓ Facilitate the transition from RUO to IVD



History

Our unrivaled reputation for quality has made Quantikine® ELISA Kits the gold standard and most referenced, ready-to-use ELISAs in the industry.

Expertise

Our scientists have developed hundreds of unique diluents and have decades of experience optimizing conditions to detect a range of analytes.

Delivery

Throughout the iterative immunoassay development process, our expert scientists and project management team will provide data reports and recommendations for assay improvements. As projects evolve, we have quality management systems and regulatory affairs in place to support every need, from basic discovery research, preclinical and clinical research through companion diagnostic applications.

Testimonial

*“Mellitus was looking for a development partner to assist the Company in converting its research assay to a commercially viable in vitro diagnostic. We had firsthand knowledge of the **exquisite technical expertise** residing within R&D Systems. With its focus on assisting clients to optimize assay reagent formulations and achieve target product performance criteria, **we knew we had found the right partner**. The group we are working with is very diligent in effectively completing jointly designed experiments and optimizing assay component configurations to meet design requirements. The team is **timely, dedicated and responsive**. We remain confident that the Mellitus Assay will complete product development within our timelines, thanks to our Development Partner, R&D Systems.”*

Bruce H. Phelps, Technology Consultant

Learn more | rndsystems.com/custom-assays

R&D SYSTEMS
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When specificity, long-term consistency, and supply are critical, trust the experts.

History

R&D Systems manufactures more than 12,500 primary antibodies, against over 3,600 target analytes, across 19 different species.

Expertise

Using in-house immunogens and proprietary technologies, R&D Systems generates the antibodies that define the industry leading Quantikine® ELISA kits.

Delivery

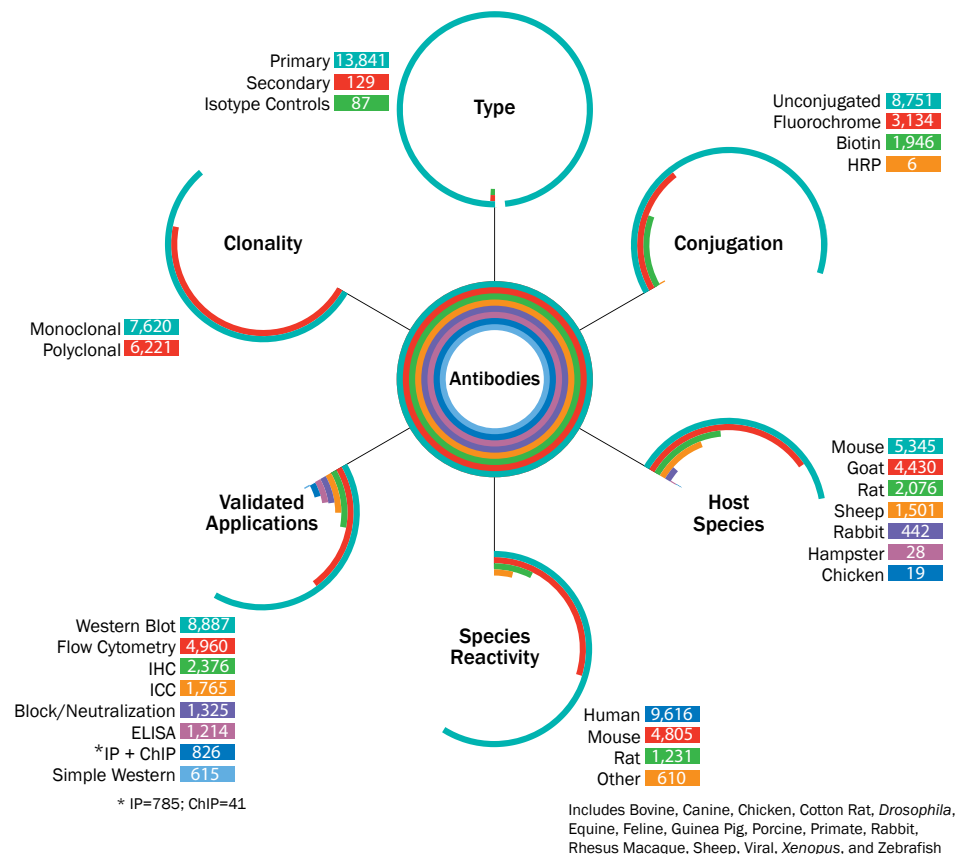
We tailor immunogen and immunization protocols to generate antibodies with high specificity and outstanding performance in your desired application. If your provided test sample meets your requirements, we will scale up production to meet your research and development needs.



Antibody Services

Available Services

- ✓ Polyclonal and monoclonal antibody development
- ✓ Rabbit recombinant monoclonal antibody development
- ✓ Hybridoma to recombinant antibody conversion
- ✓ Polyclonal to recombinant antibody conversion
- ✓ Large-scale production, affinity-based purification
- ✓ Conjugation to fluorophores, HRP, and biotin
- ✓ Access to our hybridoma panels containing thousands of non-catalog sister clones
- ✓ Monoclonal production of client-supplied hybridomas



A graphic illustration to depict the breadth of experience and expertise in the field of antibody development. Data are based on R&D Systems current retail offering.

Learn more | randsystems.com/custom-antibodies

Immortalized Antibody Supply.

Recombinant Antibody Conversion

For applications requiring large amounts of consistent antibody, R&D Systems hybridoma and B-cell to recombinant antibody conversion service produces a dependable supply of custom engineered monoclonal antibody. R&D Systems proprietary processes guarantee yields that provide the gram quantities required for the development of diagnostic and therapeutic reagents.

Why R&D Systems Recombinant Antibody Conversion?

- ✓ R&D Systems antibodies support the industry-leading Quantikine® ELISAs
- ✓ Ability to scale up to gram quantity production
- ✓ A cost-effective and time-saving solution for superior antibodies
- ✓ The sequence and cell line(s) can be held by a third party to guarantee supply
- ✓ Consistent quality and performance over time

Available Engineering Services

- ✓ Modification of the species, isotype, hinge, and Fc region
- ✓ Generation of active truncated forms
- ✓ Improved yield without any change in affinity

The Process

- 1 Customer provides: 1) cell line expressing antibody or full-length antibody sequence, 2) antigen for testing the recombinant antibody using direct ELISA, and 3) small aliquot of purified antibody.
- 2 Conversion, small scale expression of recombinant antibody, and comparison to the original hybridoma-derived antibody by R&D Systems.
- 3 Provision of data report and sample for customer's evaluation.
- 4 Exclusive supply of purified antibody.
- 5 Sequence and cell line(s) placed with third party for storage and security.



Testimonial

*"Conversion of our traditional monoclonal to recombinant antibody offered immortal **supply of a very high quality product**. We also liked the feature of the recombinant technology to be able to exchange the constant chain between different species and the ability to express the antibody as Fab fragments."*

Principal Scientist, Biotech Company

R&D SYSTEMS
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Accelerate biomarker discovery, validation, and detection with unique analyte panels.

History

With the largest immediately available retail analyte selection and an active development pipeline of new targets, R&D Systems has developed a reputation for delivering high quality and customized content for Luminex® assays.

Expertise

Building on the legacy of immunoassay development, our scientists can often translate Quantikine® ELISA reagents to the Luminex® platform and can optimize assay performance using decades of immunoassay experience.

Delivery

Utilizing our massive in-house collection of antibodies and proteins reduces development time, saves you money, and puts custom multiplex panels that detect your specific analytes of interest in your hands faster.



Luminex®

Available Services

- ✓ Unique analyte development
- ✓ Optimized panel configurations
- ✓ Sample type validation
- ✓ Evaluation of externally sourced antibodies
- ✓ Panel assembly to minimize required sample volume

Testimonial

*"Partnering with the Luminex team at R&D Systems for missing analyte development was invaluable to our project. Their **Quality Assurance expertise** and open communication ensured transparent **study progression**."*

Director, Biotech Company

Learn more | rndsystems.com/custom-luminex

A reliable and proactive partner: from research through preclinical studies, clinical trials, and post-market surveillance.

Biomarker Testing Service

Our Dedicated Team Specializes in the Following Sample Testing Services

- ✓ Biomarker testing utilizing state-of-the-art platforms:
 - ELISA, Luminex®, Simple Plex™, Proteome Profiler™ Arrays, ELISpot, and Simple Western™
- ✓ Sample stability evaluation
- ✓ Sample management
- ✓ Sample collection and shipping kits

Why Use R&D Systems Biomarker Testing Service for your Research Study?

- ✓ **Expertise.** Our Biomarker Testing Service scientists have full access to all R&D Systems products and development expertise.
- ✓ **Quality Assurance.** Stringent quality assurance program evaluates all study activities, including test performance, control results, standard operating procedures, equipment, and personnel.
- ✓ **Trust.** Our dedicated Biomarker Testing Service staff ensures your samples are treated in full accordance with the contracted study requirements. We provide rapid delivery of results and unsurpassed customer service.
- ✓ **Flexibility.** The Biomarker Testing Service team has the flexibility to work on sponsor-directed studies to fulfill any specific requests for assay services.
- ✓ **Experience.** Our Biomarker Testing Service laboratory successfully provides assay services for contract research organizations, academic groups, government organizations, and pharmaceutical companies.

Testimonial

*"This project was very successful technically and yielded a **robust data set** that met current requirements as well as provided a new tool for future use, all delivered well within my project timelines. This was due in large part to the **excellent communication** and **impressive initiative** taken by the scientists and project manager who used R&D Systems' extensive knowledge to find the best solution to my requirements."*

James Smith, Scientist at Boehringer Ingelheim Pharmaceuticals

History

We have over 20 years of experience designing, testing, and optimizing immunoassay kits to ensure the highest level of performance in analyte quantification. Support your preclinical and clinical studies with the same team that built your assay of choice.

Expertise

Scientists within the Biomarker Testing Service, a specialized division of R&D Systems, are specifically trained, operate under strict SOPs consistent with GLP, and have full access to all R&D Systems products, technologies, and development expertise.

Delivery

Entrusting our expert personnel with your study samples ensures accurate results that are returned in a timely, efficient, and customized manner under our proven quality management systems.

Trust our world-class chemistry team to deliver unique compounds and screening panels, with unrivaled analytical support and customer service.

Our History

Since the early 1980s, Tocris has been established as a leading global supplier of innovative, exceptional quality reagents for life science research. The Tocris range contains over 3,500 products, the majority of which are synthesized in-house, highlighting the expertise of our chemistry team.

Our Approach

We begin by listening. We understand that the needs of our customers are unique, and we will take the time to establish your requirements, whether it be for individual products or longer term collaborations. We will also put in place the necessary confidentiality agreement to give peace of mind that your intellectual property will be respected.

TOCRIS
a biotechne brand

Chemistry Services

Custom Synthesis

We specialize in mg to kg scale synthesis of complex organic molecules including active pharmaceutical ingredients (APIs), amino acids, peptides, scaffolds, building blocks, rare organics, and speciality fine chemicals.

Available Services

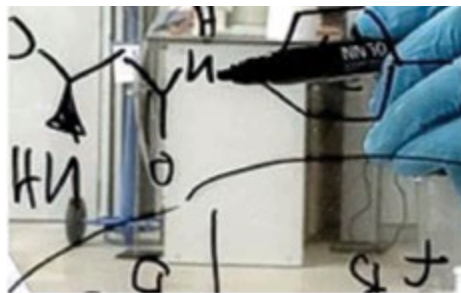
- ✓ Compounds requiring complex multistep chemistry
- ✓ Chiral synthesis and resolution/separation of enantiomers
- ✓ Stable labelling (both ^{13}C and ^2H are routine) and radiolabelling/imaging precursors
- ✓ Route development
- ✓ Conjugation chemistry
- ✓ Synthesis and extraction of natural products

Chemical Sourcing

Our global supply network is second to none. We can provide access to a reliable and sustainable source of high quality products including carbohydrates, prostaglandins, natural products, APIs, and peptides.

Available Services

- ✓ Extraction and supply of natural products from specialist phytochemical companies
- ✓ APIs sourced from a global network of suppliers
- ✓ Specialized fine chemicals such as carbohydrates, nucleotides, prostaglandins, and fermentation products
- ✓ Bulk intermediates
- ✓ Synthesis of modified (e.g., biotinylated) and unmodified peptide chains



Chemical Analysis

We can provide complete analytical support, with comprehensive QC data packages or individual analytical techniques including multinuclear NMR, HPLC, MS, LC-MS, IR, optical rotation, and micro-analysis.

Available Services

- ✓ NMR spectroscopy (300 MHz; 1H; 13C; 31P; 19F; 2D spectra such as NOSEY HETCOR; variable temp; nOe). Higher field NMR up to 600MHz is available on request.
- ✓ Electrospray MS, other techniques available on request
- ✓ HPLC / LCMS (including Reverse Phase, Normal Phase, HILIC and Chiral stationary phases)

- ✓ Method development and data interpretation
- ✓ GC (Chiral and non-chiral columns)
- ✓ Optical rotation, microanalysis, FT-IR
- ✓ Preparative HPLC (1-10s gram capability, UV/Vis or MS detection)
- ✓ Preparative SFC (1-10s gram capability, chiral separations)

email | customchemistry@bio-techne.com visit | customsynthesis.co.uk

Custom Compound Libraries from Tocris

In addition to our off-the-shelf range of Tocriscreen compound libraries, we offer a custom compound library service. Our customer service team and scientifically trained personnel will be pleased to help you create a unique compound library, designed to meet your exact screening requirements.

Tailor Your Library

- ✓ Select compounds from our list of available compounds
- ✓ Specify your desired quantities†

- ✓ Choose between dry/solid format or in DMSO
- ✓ Stipulate the tube, vial, or plate to complement your compound handling system

†The minimum order size is 80 compounds either as 1 mg solid/dry compound or as 250 μ L 10 mM DMSO stock.



email | screening.tb@bio-techne.com visit | www.tocris.com/screening

Take advantage of over 900 established bioassays to measure bioactivity.

History

With more than 4,000 bioactive proteins developed and tested, and over 3,000 small molecules available to modulate responses, no other company matches the bioassay experience of Bio-Techne.

Expertise

We have more than 900 established bioassays available to test proteins, small molecules, and antibodies. Our scientists in Bioassay Services will consult with you to select and optimize an assay to deliver relevant results.

Delivery

Raw data are provided, along with a professionally formatted report and a detailed summary of the bioassay protocol employed.

R&D SYSTEMS
a **biotechne** brand

Bioactivity Testing Services

Bioassays Include, but are not Limited to

- ✓ Proliferation Assays
- ✓ Cytotoxicity/Survival/Apoptosis
- ✓ Cellular Differentiation
- ✓ Reporter Assays
- ✓ Cytokine Induction
- ✓ Chemotaxis
- ✓ Cell Adhesion
- ✓ Signal Transduction
- ✓ Neuronal Assays
- ✓ Ligand/Receptor Binding



Learn more | randsystems.com/bioactivity-testing-services

Cell Culture Media is Important. Let the Experts Make it For You.

Cell Culture Media Services

Overview of Custom Cell Culture Capabilities

- ✓ Media or supplement production
- ✓ GMP media production
- ✓ Media formula optimization
- ✓ Custom labeling
- ✓ Assays for testing media using stem cells, immune cells, and other cell lines

Cell Culture Media Development Experience:

Cell Lines and Primary Cells

- ✓ HEK cells
- ✓ CHO cells
- ✓ Epithelial cells
- ✓ Sf21

Immune Cell Expansion and Differentiation

Neural Cell Culture

Tumorspheres

Stem Cells

- ✓ Mesenchymal Stem Cells
- ✓ Pluripotent Stem Cells
- ✓ Hematopoietic Stem Cells
- ✓ Cancer Stem Cells

Cell Culture Media Manufacturing

The right cell culture media goes a long way. You've done the legwork to create the best media for your cells, now let us help you expedite and standardize production. Inquire about our custom cell culture media manufacturing services to start the conversation.

Cell Culture Media Formulation and Optimization

Component optimization within cell culture media can be critical for performance. Using design-of-experiments (DOE) and our large portfolio of proteins and small molecules, we can generate media formulations that will help you find the best recipe.

Specialty Cell Culture Media Testing

To provide consistent media to our customers we have developed and validated specialized assays, which are now available to you. We have a battery of established tests and assays in place to monitor growth, expansion, and differentiation for a variety of cell types. Inquire today to discuss custom assays based on your needs.

Testimonial

*"Being a start-up, we were pleasantly surprised that Bio-Techne treated our development needs with as much attention as a larger company. As we scaled and made changes to our production model, **Bio-Techne responded with flexibility to meet our increasing demand and schedule** while still delivering consistent product to our specifications."*

Janet, StemoniX

Additional Services

Ubiquitin/Proteasome Custom Services from Boston Biochem

Boston Biochem is committed to providing flexible, high quality, and confidential protein biochemistry contract services for Ubiquitin-focused research. We take a collaborative approach in establishing effective working relationships with our clients. Our aim is to provide integrated biochemistry custom services that alleviate bottlenecks and significantly increase your research productivity.

Available Services

- ✓ HTS Sourcing/Bulk Manufacturing
- ✓ Assay Development for the Ubiquitin Proteasome Pathway
- ✓ Existing Product Modification

Learn more | rndsystems.com/custom-ubiquitin



Bulk & Custom Orders from Novus Biologicals

Our custom services are designed to save time and money. Utilize our services to source and/or produce custom products for your specific needs. Our specialists can search multiple suppliers and expedite custom productions. We can assist with the navigation and selection of primary antibodies (monoclonal and polyclonal), secondary antibodies, proteins, kits, lysates, antibody pairs, and isotype controls.

If we do not currently offer the perfect product, we can utilize our relationships with global suppliers and coordinate custom productions.

Available Services

- ✓ Antibody Sourcing
- ✓ Custom Conjugation
- ✓ Custom Buffers and Concentrations
- ✓ Antibody Licensing

Learn more | novusbio.com/bulk



Multi-analyte Immunoassays from ProteinSimple

ProteinSimple develops and commercializes proprietary systems and consumables for protein analysis that ultimately help reveal new insights into the true nature of proteins. Our comprehensive portfolio of tools includes immunoassay systems that quantify protein expression and systems that probe the structure and purity of protein-based therapeutics.

Simple Plex™ assays are fully automated, multi-analyte immunoassays. Think mini ELISAs—just without the cross-reactivity. Simple Plex assays on the Ella platform let you run multiple samples in approximately one hour. That includes fully analyzed results for up to four analytes in each sample.

Available Services

- ✓ Custom assay development
- ✓ Single-plex ELISA comparison testing
- ✓ Sample type validation

Learn more | proteinsimple.com/request_quote.html





R&D SYSTEMS

 **NOVUS**
BIOLOGICALS

TOCRIS

protein  simple

bio-techne[®]

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