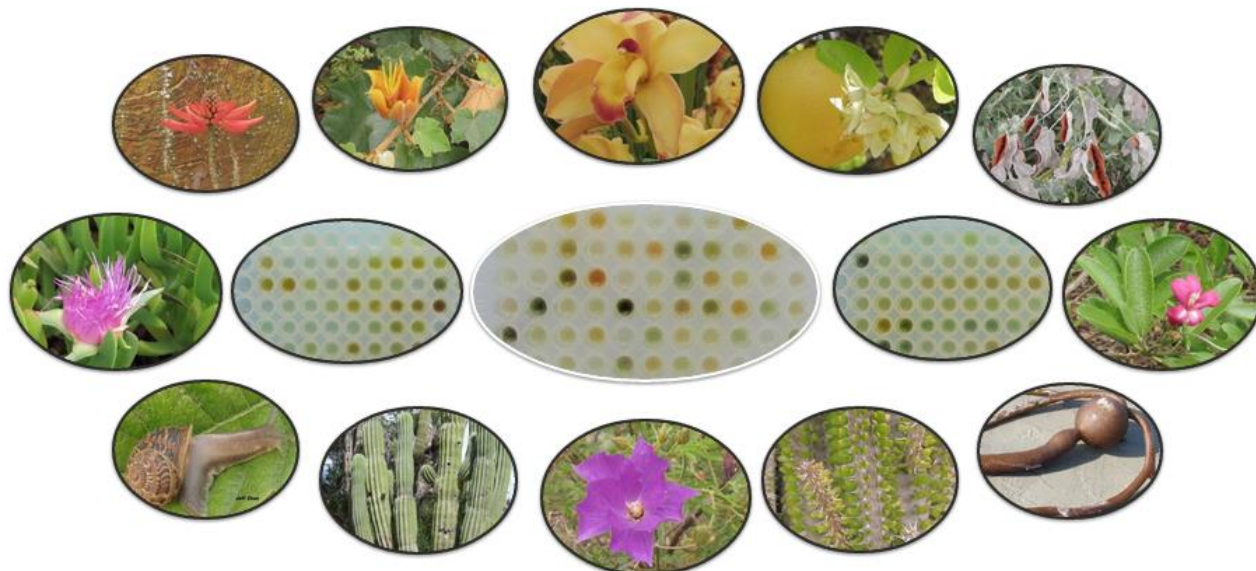


AZ Nature Art (www.AZNPbio.com) is a bio-tech company certified by **Dun & Bradstreet**



The banner features the Dun & Bradstreet logo on the left. The main text reads 'AZNPbio (天然产物大全, AZ Nature Art)' with the tagline 'Assay-ready Compound and Extract Library for Bio-active Screening'. Below this is a 'Collection since 1998' logo with a laurel wreath. A navigation bar at the bottom contains links: Home, Who We Are, Our Sample Library, Our Service, Our R&D, Contact, Herb Blog, and 中文摘要.

Fractionated and semi-purified **BIO-SAMPLES** derived from highly diversified bio-collections have less assay interference



AZ Nature Art Co. Lid

<http://www.aznpbio.com>

9285 Dowdy Drive, Suite 103

San Diego, CA 92126

info@aznpbio.com Tel: 360-464-3767

AZNPbio is a San Diego, CA based, private bio-tech company engaged in natural product sourcing, collection, extraction, purification and manufacturing to serve health product company's new target and ingredient developments. We have operations and collaborations in US and China.

Who We Are

AZNPbio is a San Diego, California (CA) based, privately-held bio-tech company engaged in natural product sourcing, collection, extraction, purification and manufacturing to serve health product company's ever-growing new target and ingredient developments. We have operations and collaborations in US and China.

Our Library

Our library includes more than 8000 bio-collections from over 3500 genera. Currently 5000 extracts purified from 3000 plant species, and 7000 HPLC-isolated compounds and fractions are ready for bio-active screening. One-third of our collections have origin from the Middle East and Africa.

Our Mission

With samples derived from lichen, liverwort, fern, algae, mushroom, aquatics, marine, worm, higher plants and insects for bio-screening (HTS), generating hit-to-lead and preclinical candidates; AZNPbio can help grow your R&D pipeline of new drugs, cosmetics, preservatives, natural flavors, herbicides and pesticides.

Jeff Zhao, Ph.D., CEO (总经理) of AZ Nature Art (天然产物大全 or AZNPbio)

Director, professor and scientist of natural product chemistry, bio-active screening and new health product research and development since 1983

Post-Doc of Chemoprevention, Columbia University, New York

Ph.D of Pharmaceutical Chemistry, Shenyang, China

Advanced Study of Biochemistry in Kitasato Institute of Japan

MS of Analytical Chemistry

BS of Traditional Chinese Medicine

Specilized in cancer prevention, immune modulator, anti-tumor compound, anti-obesity ingredient, skin problems (acne, psoriasis, UVB damage), pain control, CB1 antagonist, lipase inhibitor, BKb1 antagonist, anti-diabetic plants, antiinflammation research and tyrosinase inhibitor screening. Isolated and identified more than 300 active compounds from natural sources. Four inventions have been commercialized. Principle investigators of 1 new prescription drug, 2 new functional cosmetic ingredients and 1 new dietary supplement formulations.

Our Specialties

We can provide high-quality commonly used natural products for new product research and development.

Our collection is large, highly diversified and perfect for the development of new nutraceutical, functional food, dietary supplement, cosmeceutical, pharmaceutical and consumer products.

Recently many natural insecticidals, antifeedants, sweeteners, flavors, coloring ingredients, perfumes, skin-care actives, preservatives and germicides have been discovered from natural products.

We offer design and consulting services for new cosmetics, dietary supplement and preservative industries.

Seattle Herbal Art Institute to AZ Nature Art - Our History

Herb Research Association was established and began photographing and collecting medicinal plants around New York and New Jersey areas in 1996.

Between 1998 and 2002, **Herb Research Association** carried out mushroom collections in Central US, performed extraction of bio-collections for cancer prevention research and herb therapy practice.

Seattle Herbal Art Institute was established in Washington State in 2006. Natural product collection, extract purchasing from all over the world and database building have been our main businesses. **Seattle Herbal Art Institute herb** specimens have been well accepted and utilized worldwide.

Seattle Herbal Art Institute was relocated to San Diego, California and renamed as **AZNPbio** in 2011. The company started large scale biomass grinding, extraction and assay sample preparation. **AZNPbio** established partnerships with companies and laboratories in US and China for research collaboration and assay sample sharing.

AZNPbio (AZ Nature Art) launched bio-sample library for bio-screening in 2012. The numbers of our bio-collections, extracts and compounds are growing daily.

AZNPbio natural product collections are highly diversified and origin from all over the world. We usually do not collect more than 2 species from one genus. Online resources are frequently checked to reduce the collection of well-studied species.

More than half of our collections are chemically-untapped, so the possibility of finding new bio-active compounds from our library should be high.

Our botanical scientists perform field collection personally in order to reduce error and maintain the high quality of our library. Besides leaves and branches, we make more efforts to collect roots, barks, alga, lichens, liverworts, mushrooms, ferns, seaweeds, clams, insects, worms and galls.

About 8000 natural products belonging to over 3500 genera are in our library. Each sample in air-tight bag is sufficient to generate enough extract for a complete research.

Assay-ready bio-samples are dissolved in DMSO and stored in 96-deep-well master plates for assay daughter plate making. For uniformed assay dilution and avoiding false and missing hits, our samples are distributed into different plates according to their nature and similarity. We can assist you to complete biochemical, enzyme and cell-based assays.

Screening party purchases hit IDs from us for further developments. We release all information associated with the hits. Consistent bulk materials, powder, extracts and some compounds can be supplied for chemical and MOA studies.

We have the expertise and informative database to help your screening, compound isolation and active identification. Our database is the R&D platform for rapid pinpointing actives. Organism description, uses, distribution, safety, development status, chemical, biological and clinical study information are gathered continuously.

All intellectual property rights would belong to screening party if screening party screen, isolate and characterize the active structures.

Besides Sample Library, What Else We Can Do:

1. Authentic identification of ethnomedicinal plants associated with common names, folk and historic uses, scientific definitions, description, likely alterations and synonyms
2. Geographic distribution and abundance analysis
3. Biological study and Efficacy review
4. Raw material evaluation and sourcing (vendor audit and price investigation, available ingredient and extract purity, strength, composition, active compounds and content range)
5. Comparison and selection of functional plants and ingredients for product formulation
6. Safety evaluation including acute and chronic toxicities, LD50, effects on infants and reproductive organs
7. Irritation and allergy assessment
8. Dosage range suggestion
9. Novelty assessment and patent claims construction
10. Assessment and prediction of oral availability and tissue distribution
11. Quality control method design (UV, HPLC, TLC, HPTLC, GC or GC/MS, organic solvent residues, microbial, heavy metals, and pesticides in standardized extract, compound and ingredient)
12. Manufacturing methods
13. We also supply herbs, raw materials, authentic extracts and cutting-edge science-based functional ingredients.

For hundreds of years, natural products with traditional medicinal uses have led to many new drug molecule inventions.

Ancestors have gained valuable herb knowledge from thousand years of trial-and-error.

Those natural products without folk use records, or not qualified as folk medicines in the process of natural selection may have no biological effects, or the effect is too weak to be noticed.

AZNPbio library serve as shortcuts for finding new molecules, of which possess desirable characters of natural chiral centers, ADME, solubility, stability, permeability, drug-likeness for your structure modification, optimization, and targeting synthesis. These new molecules could also be used as precursors or intermediates for testing hypothesis, generating analogues, patentable lead compounds and INDs (Investigative New Drug).

AZNPbio sample library is unique

We select species for collection according to the potential of finding new bio-actives. Each species is carefully screened to ensure it has medicinal use records and acceptable safety profile.

Once bio-materials arrive at our facility, sorting, checking, processing, cataloging, drying and grinding are carried out in an orderly and careful manner. We use freeze-dryer for some tough-drying samples to avoid chemical degradation and molding.

Many natural product high throughput screening projects fail due to the use of single protocol to process all kinds of bio-masses. Our solution is using different protocols to treat different bio-materials.

Step-wise solvent partition, serial extraction and column separation are used to eliminate interference substances such as salts, proteins, tannin, fats, sugars, polysaccharides, chlorophylls and other commonly found chemicals in natural products, so that assay interferences will be reduced by using our samples.

We categorizes and collects the parts from one living organism separately to reduce man-made extract complexity. Our assay-ready samples from different plant parts such as leaves, roots, and barks are loaded into different master plates for easy and uniformed assay dilution.

Pharmaceutical industry's productivity continues to be dismal. One reason may have been the diminished interest in natural products drug discovery as the industry embraced promising and exciting new technologies.

However, combinatorial chemistry's promise to fill drug development pipelines with de novo synthetic small-molecule drug candidates is unfulfilled.

Natural compounds have complicated structures and exist in complex mixture. The complicated structures have an advantage in that they are extremely novel compounds, but the complication also makes isolation and identification difficult.

The mixture of thousands of different types of compounds with various contents in a living organism extract can cause bio-assay interference which often leads to bio-screening failure. High content molecules found in most natural product extracts, such as chlorophyll, fat and tannin act as interference in screening process.

The practical difficulties of natural product drug discovery are being overcome by the advances in separation and identification technologies.

药用生物样品库, 数据库, 新药研发平台

历史证明使用没有经过分离的提取物直接进行药物筛选几乎无任何意义

全新的天然药物样品库及管理收集的数据库,独特的收集重点,广泛多样化的生物品种(高等植物,真菌,蘑菇,苔藓,蕨类,海洋生物,昆虫等)加上特有的样品处理及纯化方法使本样品库成为世界上独一无二的。重点收集世界范围内一切没有化学和药理研究过的传统民间药(民间药是发现现代新药的最快途径)。避免了其它天然产物样品库的品种重复多,提取物混杂和活性测定干扰严重等问题。本样品库的初提取物用溶剂梯度萃取成多个纯化提取物。纯化提取物又进一步用正向和反相层析柱分离成几十个组分。

过去十几年来新药开发过度依赖生物遗传工程及电脑模拟指导的全合成造成新药批准减少。目前世界性新药研发周期加长,上市减慢。各大制药公司的新药研发储备(R&D PIPELINES)正在枯竭。即使几个新药勉强上市,也多在几年后因毒副作用而被病人集体控告而赔偿大笔金钱。西方各制药公司正在进入一百多年来第一次因新产品青黄不接而产生的财务危机。

过去二十五年间全世界 1010 个新药中仍然有一半左右是天然化合物或是根据天然化合物而合成的。二十年前的三十年间有一多半新药属于天然化合物或天然化合物的半合成结构改造物。十几亿个可能存在的全部天然产物分子中只有 1-2% 被药理研究过。在目前已发现的近 25 万个天然化合物及其衍生物中,只有 1 万个左右有生物活性记载,其它 20 多万天然化合物的很多健康作用还没有被发现。有待于用现有的成千上万个活性测试模型进行筛选。

中国的中药利用及研发有独到之处,常用中药已被研究多年了,世界各地还有许多民间药没有被开发。利用民间药研发 (1) 副作用小或几乎无副作用的化合物复方药, (2) 主要用于慢性病和 (3) 适合长期服用的新天然药 应是一个很好的方向。

继续走前二十年仿造老路会使中国的新药研发永远跟在西方国家的后面。我们的药用生物样品库为国内外添补了一项空白。它是研制开发现代新药,赶超世界,保持中国特色的可靠平台。

本库收集的各国民间药具有各种种药性及应用记载,几乎覆盖了所有现代健康问题。过去 100 年间许多西药新药来自于传统民间药(中国,印度和欧洲)。但是非洲,澳洲及中南美洲的民间药却研究开发较少。所以非洲,澳洲及中南美洲的样品收集是本库的重点。有些天然化合物活性可能不够强,但可作为新药合成靶向先导物,靶向先导物是目前新药开发急需的。

过去许多大医药公司的大规模天然药物筛选并不十分成功,甚至失败。主要是由于用于筛选的提取物太复杂,对现代酶及细胞活性试验干扰极其严重。约有 45% 的植物提取物含有鞣质和其它多酚类化合物对酶活性有无选择性的抑制作用。约有 50% 的植物提取物有叶绿素和脂肪等非极性化合物对受体结合试验有严重干扰。当时大公司的收集库是相当大的一一进行柱分离是不可想象的,使许多天然药物筛选项目不了了之。

本库是吸取了过去所有天然药物研发的经验教训而设计建立的。建立一定规模的生物库是一个庞大的系统工程,需要多专业合作,巨大的人力及精力投入。要求熟知鉴定全世界植物及其它生物种类;熟知天然产物的民间应用;毒副作用;产地;化学成分;药理作用及生物活性;还要有生物库筛选,活性成分分离及鉴定经验。

首先,我们对七大洲的生物品种进行分析,利用各种收索渠道(MEDLINE, 网页,专业书籍等)发现所有民间药品种。形成七个大洲民间药用品种列表。首先除掉一些有效成分明确,已被详细研究过的品种。利用亲自采集或购买等渠道得到所需品种;摄影(高分辨率影象正在取代传统压制标本);登记样品及有关信息进入数据库;留样;粉碎;取适量粉末提取;精制萃取;层析柱分离;干燥;称量;DMSO 溶解;转移溶液进储备母盘。

第一批活性测定用的 10560 个样品溶液已装入 120 个储备母盘,足够 85 种/次筛选。筛选方多为医药科研院所和制药公司。目前可靠的生物活性筛选模型有几千种,每种筛选模型从 1000 个药用生物样品中约能筛出 5-10 个有效样品。发现新有效成分的可能性高于其它盲目收集的生物样品库。筛选结束后筛选方决定和选择购买多少及那些有效样品编号的拉丁名和与其相关信息。

本生物库 (8000) 生物样品) 适用于开发各类新药, 保健营养品, 功能性化妆品, 功能性日用品及食品添加剂等新产品。

我们的药用生物库和数据库 比较 其它天然产物样品库

我们的药用生物库:

根据现在活性筛选和药物等健康产品开发需求而新建的
世界范围内生物品种的平衡收集
选择性收集有民间健康应用的天然产物
选择采集有效部位如根和树皮等
样品收集建库由一人管理, 几乎无错误
部位如根茎叶花果实及种子分开收集
高等植物, 蘑菇, 苔藓, 蕨类及海洋生物, 少量昆虫类
样品, 粉末及提取物真空, 无氧, 永久保存
有全部与品种有关的信息, 便于靶向选择及有效成分鉴定
对提取物进行溶剂系统梯度萃取, 得多种纯化提取物, 各类成分分开
纯化提取物用层析柱分离成几十个组分/化合物
相同部位的提取物或组分装入同一活性测试母盘, 便于统一测试浓度

其它公司的天然产物样品库:

太久, 过期, 落后及不适合现今活性筛选要求了
多为局部地区易采集品种的收集
盲目大规模收集
多为易采的枝叶
多人建立, 错误多, 鉴定混乱
多数为不分别收集的枝叶或全植物
多数只有大量高等植物.
药材及粉末室温保存, 过期快
无品种有关的信息
多数为甲醇及二氯甲烷提取物, 大量干扰成分鞣质, 脂肪及叶绿素混在一起
粗提取物太混杂, 造成分离效果不佳.
不相同部位的提取物装入同一活性测试母盘, 难于统一测试浓度,
有效物筛选遗漏或假有效
