# Life Sciences & Agriculture



LINCOLN PARTNERSHIP FOR ECONOMIC DEVELOPMENT 1135 M STREET, SUITE 200 LINCOLN, NE 68508 402.436.2350 WWW.SELECTLINCOLN.ORG A PROFILE OF LINCOLN'S
LIFE SCIENCES AND AGRICULTURE
INDUSTRY CLUSTER

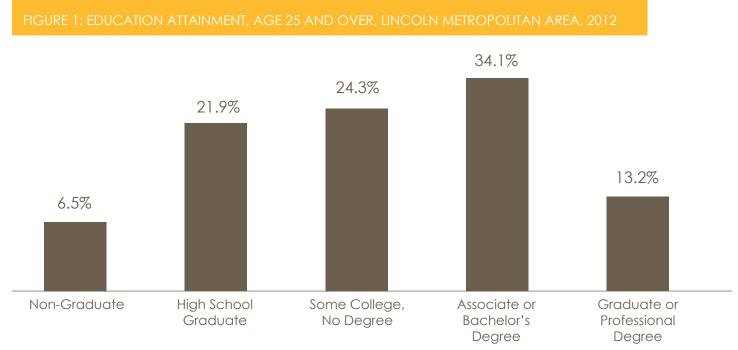


# INTRODUCTION

The life sciences and agriculture sectors encompass a broad spectrum of industries and technology-partner-ships, ranging from industrial-agricultural technology research to organic agriculture to final-product food processing. Life sciences is a capital-intensive, highly-technical, highly-skilled industries. Food processing is also a high-valued added agricultural industry. Lincoln, Nebraska is an ideal location for such businesses due to its highly educated workforce, low labor costs, low cost of living, low traffic congestion costs, business friendly environment, and university research facilities.

# WHY LINCOLN?

Lincoln, a centrally-located community of 300,000, is well positioned to cultivate this industry through its highly educated workforce<sup>1</sup>, existing agriculture-related biotech presence, extensive university research and outstanding quality of life.

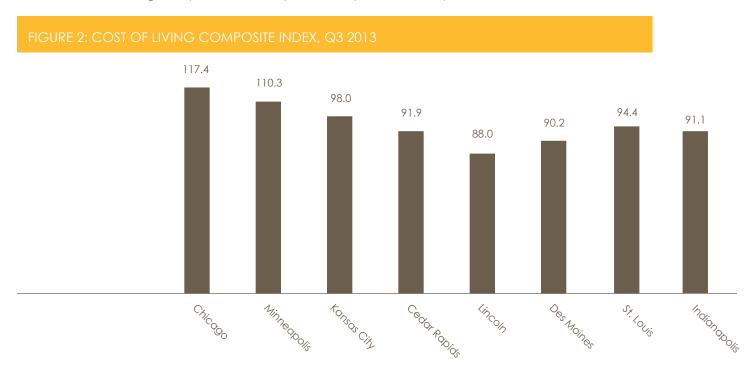


Lincoln offers the ambiance of a friendly small town and the amenities, attractions and entertainment opportunities of a major metropolitan area. Lincoln is both the state capital and home to the flagship campus of the University of Nebraska; as a result it provides a greater range of offerings than might be expected in a community of its size. Efficient transportation, a stable business environment, advanced health-care technology and an excellent educational system are just a few of the reasons why Lincoln ranks highly in livability studies. As described in the pages that follow, Lincoln has significant costs advantages in terms of cost-of-living, wages, space costs and other business costs. Lincoln's strengths in agriculture and animal sciences and its research centers dedicated to food processing make the city a natural fit for the life sciences and agriculture industries. In particular Lincoln benefits from the significant food science presence at the University of Nebraska-Lincoln (UNL). Areas of excellence include bioinformatics, plant genomics, and entrepreneurship; all central pillars of strong food processing and agriculture industries. A number of local firms stem from research conducted at UNL. In addition, UNL graduates hundreds of agriculture, agribusiness, engineering and life sciences students per year—individuals who are ideal professionals for the agricultural products industry.

<sup>&</sup>lt;sup>1</sup> Source: U.S. Census Bureau, Table DP02, Lancaster County, 2012.

# **COST COMPARISONS**

Lincoln's cost of living compares favorably with comparison metropolitan areas nationwide.<sup>2</sup>

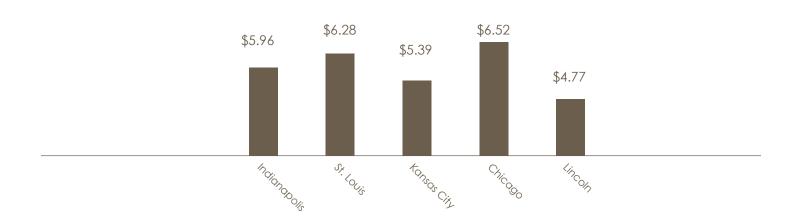


Base = 100, National Average

Council for Community and Economic Research, "(previously Accra) Cost of Living Index 3Q 2013." Published Oct. 2013.

In addition to Lincoln's exceptional amenities and educated workforce, Lincoln has the lowest combined industrial manufacturing space costs among comparison metropolitan areas3. Rent costs are presented below for both industrial high tech/ R&D and manufacturing properties.



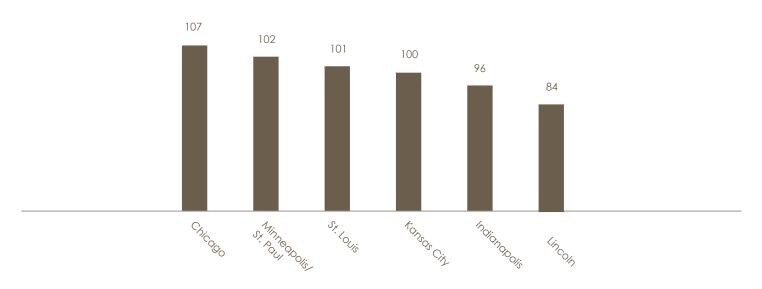


Lincoln also ranks amongst the lowest with regard to relative wage costs. 1 This completes a perfect combination of unique amenities, low cost of living, and an attractive business environment through a highly educated workforce, and low costs of industrial space and employment. Finally, Lincoln also has truly unique access to raw materials for food processing. Nebraska and surrounding states are able to supply food processors with the raw materials that make the Midwest, and particularly Lincoln, a logical choice for locating their operations. In addition to being a large corn producing region, Nebraska counties produce much of the country's beef, wheat, soybeans, and other vital raw materials for food processing.

LoopNet Real Estate Research, http://www.loopnet.com

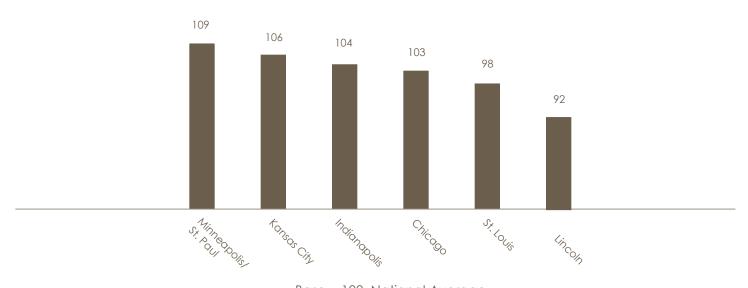
U.S. Bureau of Labor Statistics, National Compensation Survey, "Pay relatives for major occupational groups in metropolitan areas," http://www.bls.gov/ncs/ocs/sp/nctb1893.pdf; Last Modified Date: May 25, 2011.

figure 4: relative wage for professional and related workers, 201



Base = 100, National Average

#### FIGURE 5: RELATIVE WAGE FOR PRODUCTION WORKERS, 2017



Base = 100, National Average

We provide detailed salary information for selected advanced manufacturing occupations on the next page. Average unemployment insurance tax rate on taxable wages, average price for industrial gas per thousand cubic feet, industrial electric service typical industrial bill, and top state corporate income tax rate can be found on page 7. Lincoln is among the three lowest cost metro areas among comparison cities for average unemployment insurance tax rate, price for industrial gas, and typical industrial electric bill service rates.

<sup>&</sup>lt;sup>4</sup> Source: U.S. Bureau of Labor Statistics, National Compensation Survey, "Pay relatives for major occupational groups in metropolitan areas," http://www.bls.gov/ncs/ocs/sp/nctb1893.pdf; Last Modified Date: May 25, 2011.

#### TABLE 1: AVERAGE ANNUAL SALARY, LINCOLN MSA, Q3 2013

# ANNUAL SALARY

TOTAL ALL OCCUPATIONS	ENTRY \$19,407	EXPERIENCE \$51,826	MEAN \$41,020
MANAGEMENT OCCUPATIONS	\$50,703	\$119,035	\$96,257
Industrial Production Managers	\$58,580	\$97,599	\$84,593
BUSINESS AND FINANCIAL OPERATIONS OCCUPATIONS	\$37,602	\$71,708	\$60,339
Logisticians	\$52,592	\$78,380	\$69,785
ARCHITECTURE AND ENGINEERING OCCUPATIONS	\$40,875	\$78,913	\$66,233
Industrial Engineers	\$53,503	\$76,923	\$69,116
LIFE, PHYSICAL AND SOCIAL SCIENCE OCCUPATIONS	\$35,281	\$64,399	\$54,693
Chemists	\$46,761	\$81,087	\$69,644
OFFICE AND ADMINISTRATIVE SUPPORT OCCUPATIONS	\$19,701	\$36,929	\$31,186
Production, Planning, and Expediting Clerks	\$26,661	\$47,589	\$40,614
Shipping, Receiving, and Traffic Clerks	\$19,465	\$34,716	\$29,632
FARMING, FISHING, AND FORESTRY OCCUPATIONS	\$16,887	\$35,848	\$29,528
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	\$16,871	\$26,782	\$23,479
INSTALLATION, MAINTENANCE, AND REPAIR OCCUPATIONS	\$27,963	\$50,296	\$42,852
Bus and Truck Mechanics and Diesel Engine Specialists	\$29,882	\$43,937	\$39,252
Industrial Machinery Mechanics	\$33,502	\$50,991	\$45,161
PRODUCTION OCCUPATIONS	\$22,377	\$41,864	\$35,368
First-Line Supervisors of Production and Operating Workers	\$40,763	\$67,659	\$58,694
Inspectors Testers Sorters Samplers and Weighers	\$28,364	\$45,610	\$39,861
Packaging and Filling Machine Operators and Tenders	\$21,313	\$29,282	\$26,626
TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS	\$18,264	\$39,109	\$32,160
First-Line Supervisors of Trans. & Material-Moving Machine & Vehicle Ops.	\$33,290	\$57,976	\$49,748
Industrial Truck and Tractor Operators	\$25,774	\$36,799	\$33,124

Source: https://neworks.nebraska.gov/ Historical Data Analysis: Emp. and Wage Data, Occupation Data, Occupational Wage Rates (OES)

TABLE 1: SELECTED BUSINESS COSTS FOR LIFE SCIENCES AND AGRICULTURE INDUSTRY (THREE LOWEST COST METRO AREAS LISTED IN BOLD)

	Average Unemployment Insurance Tax Rate		Avg. Price Industrial Gas/ Thousand Cubic Typical Industrial Bill, Service Rates in Effect January 1, 2013 (City)		es in Effect,	Top State Corporate	
Metropolitan Area[1]	on Taxable Wages 2012 (State Average)	Right-to- Work State?	Feet 2012 (State Avg.)	75kW, 50mWh	1000kW, 400mWh	Income[2] Tax Rate 2013	
Lincoln	2.41%	Yes	\$4.34	\$2,566	\$27,802	7.81%	
Des Moines	2.39%	Yes	\$4.70	\$2,387	\$20,802	12.00%	
Indianapolis	3.41%	Yes	\$6.19	\$3,618	\$30,917	7.50%	
Kansas City	2.33%	No	\$7.93	\$3,153	\$31,026	6.25%	
St. Louis	2.33%	No	\$7.93	\$2,962	\$25,641	6.25%	
Minneapolis/St. Paul	2.56%	No	\$4.48	\$3,516	\$33,597	9.80%	
Cedar Rapids	2.39%	Yes	\$4.70	\$2,992	\$29,899	12.00%	
Chicago	4.00%	No	\$5.64	\$4,523	\$35,474	9.50%	

<sup>[1]</sup> For metropolitan areas located in multiple states (Chicago, Kansas City, and Newark), the state averages from the state where the metropolitan areas' economic activity is concentrated are utilized (Illinois, Missouri, and New Jersey, respectively).

[2] Tax may be eligible for use of credits earned in state incentive program.

#### Sources:

A. U.S. Department of Labor Office of Unemployment Insurance Division of Fiscal and Actuarial Services (2012), Significant Measures of State Unemployment Insurance Tax Systems (Avg. Tax Rate) for Average Unemployment Insurance Tax Rates: http://workforcesecurity.doleta.gov/unemploy/pdf/sigmeasuitaxsys12.pdf

- B. US Census Bureau, 2012 Statistical Abstract, Labor Union Membership by State for Right-to-Work State: http://www.census.gov/compendia/statab/cats/labor\_force\_employment\_earnings/work\_stoppages\_and\_unions.html
- C. US Energy Information Administration, Natural Gas, for Average Industrial Price: http://www.eia.gov/dnav/ng/ng\_sum\_lsum\_a\_EPG0\_PIN\_DMcf\_a.htm
- D. Lincoln Electric System, National Electric Rate Survey '13, Average Price/KWH: http://www.les.com/quick\_links/rate\_survey.aspx?look=b
- E. Tax Foundation for State Corporate Tax Rates: http://taxfoundation.org/article/state-corporate-income-tax-rates-2000-2013

<sup>&</sup>lt;sup>1</sup> For metropolitan areas located in multiple states (Chicago, Kansas City, and Newark), the state averages from the state where the metropolitan areas' economic activity is concentrated are utilized (Illinois, Missouri, and New Jersey, respectively).

# **EDUCATION RESOURCES**

Lincoln's Life Sciences and Agriculture sector benefits from the vast array of programs that support the development of a specialized workforce for this industry.

The University of Nebraska-Lincoln (UNL), Union College, Nebraska Wesleyan University, Concordia University, and Doane College all provide biology and chemistry programs. While UNL is certainly the backbone of agricultural and food science research and education in Lincoln, there are many institutions that offer 2-year and 4-year degree programs in this field: Concordia College, Doane College, Nebraska Wesleyan University, Southeast Community College, and Union College.

In 2010 alone, the colleges and universities in Lincoln graduate nearly 630 students with bachelor's degrees in majors related to this sector, another 63 with associate's degrees, and over 110 with post-graduate degrees.

Bachelor's Degrees Awarded	Concordia University	Doane College	Kaplan University	Nebraska Wesleyan University	Peru State	Southeast Community College	Union College	UNL	Total
Agriculture Business and Management, General						65		28	93
Agricultural Economics								34	34
Agricultural/Biological Engineering and Bioengineering								41	41
Agricultural Mechanization, General								20	20
Agriculture, General								15	15
Agronomy and Crop Science								31	31
Animal Sciences, General								68	68
Biochemistry				5	4			51	60
Biology/Biological Sciences, General	13			34	6		8	122	183
Chemical Engineering								17	17
Chemistry, General				2			1	24	27
Foods, Nutrition, and Wellness Studies, General								173	173
Food Science								14	14
Horticulture Science								12	12
Liberal Arts and Sciences/ Liberal Studies		20			6		4	2	32
Range Science and Management								4	4
Total	13	20	0	41	16	65	13	656	824
A: Associates Degrees; B: Associ	ciates and Bo	achelors De	egrees; C: C	ertificate Pro	gram			1	1
Source: http://nces.ed.gov/co	llegenavigat	or/							

Post Graduate Degrees (M.A. & Ph.D.) Awarded	UNL	Total
Agricultural Economics	6	6
Agronomy and Crop Science	15	15
Animal Sciences, General	20	20
Biochemistry	5	5
Biology/Biological Sciences, General	16	16
Chemical Engineering	1	1
Chemistry, General	19	19
Foods, Nutrition, and Wellness Studies, General	20	20
Food Science	11	11
Horticultural Science	5	5
Nutrition Sciences	7	7
Total	125	125

Source: http://nces.ed.gov/collegenavigator/

# RESEARCH AND INDUSTRY SERVICES

The life science and agriculture industries benefit from research programs at the University of Nebraska-Lincoln (UNL). UNL's extensive agricultural-research, life sciences, and food processing infrastructure include:

Agricultural Research Division (ARD)

The Agricultural Research Division is the major research agency of the University of Nebraska's Institute of Agriculture and Natural Resources and is Nebraska's Agricultural Experiment Station. ARD is part of a national network of state agricultural experiment stations at Land Grant Universities across the United States. ARD scientists make important contributions to the state's agriculture, food industries, environment, the well-being of families, and community development.

For more information, see the source of this passage: http://ard.unl.edu

# **Food Processing Center**

The Food Processing Center (FPC) at UNL serves to nurture growth and retention, as well as expansion of the food processing industry in Lincoln and surrounding communities. The FPC serves both established businesses and individuals and companies looking to enter the market. In particular, the FPC helps to ensure the successful implementation of new products into the marketplace.

# The FPC provides a wide range of vital services:

Business and Market Development: research and evaluation of products, pricing, distribution channels and target markets; strategy development for product introduction, marketing and promotion; and assistance with electronic commerce, expansion planning and exporting.

Product and Process Development: development of concept, prototype and product/process specifications; assistance with line extensions and reformulations, ingredient substitution and quality improvements; scale-up from bench top; and assessment of food safety regulatory issues/requirements.

*Pilot Plant Services*: processing of fruits and vegetables, bakery items, tortillas and chips, meat and poultry; extrusion, dehydration and packaging technologies; dairy productions and research; and protein separations, purification and scale-up.

Laboratory Services: microbiological analysis, mold isolation and identification, and shelf-life testing; analytical and rapid methods development; nutritional analysis and labeling assistance; sensory evaluation; and food allergen residue analysis.

Specialized Services: Custom Processing Network; Food Entrepreneur Assistance Program; Food Allergy Research and Resource Program; and workshops and seminars.

For more information, see the source of this passage: http://fpc.unl.edu

## Food Allergy Research and Resource Program (FARRP)

FARRP is a cooperative venture between the University of Nebraska and more than 50 member companies, more than one dozen staff members and several graduate students. FARRP develops and provides the food industry with credible information, expert opinions, tools, and services relating to allergenic foods. FARRP also provides the agricultural biotechnology industry with credible information, expert opinions, tools, and services relating to novel foods and food ingredients including genetically modified products. FARRP's vital contribution to the food industry includes developing analytical methods for the detection of allergens in food; conducting confidential analysis for the food industry; providing training and consultation for member companies in the areas of allergens, sanitation and food safety protocols; and assisting the food industry and related companies with the regulatory aspects of allergens.

For more information, see the source of this passage: http://www.farrp.org/

## Industrial Agricultural Products Center (IAPC)

Through this center, created in 1988, UNL scientists are researching and developing new industrial uses for agricultural commodities and exploring potentially profitable new crops. The broad mission of the IAPC is developing uses for agricultural raw materials. One thrust of the center is to turn corn and wheat starch into environmentally and economically promising bioplastics. Center researchers invented a system to produce biodegradable plastics made mostly from starch. The system blends corn or wheat starch with conventional plastic resins.

For more information, see the source of this passage: http://agproducts.unl.edu

## **UNL Center for Biotechnology**

The Center has produced leading research on genomics, proteomics, and bioinformatics. The Center promotes research in all aspects of molecular life sciences leading to improvements in agriculture, health care and the environment. The center is supported by the Nebraska Research Initiative funds allocated through the Center for Biotechnology and by funds from the National Science Foundation (EPSCoR Infrastructure grant). Currently there are 7 core facilities at the Center: Genomics, Structural Biology, Flow Spectrometry, Mass Spectrometry, Plant Transformation, Bioinformatics, and Microscopy.

For more information, see the source of this passage: http://www.biotech.unl.edu

# Organic Agriculture

Lincoln is home to the Organic Crop Improvement Association (OCIA) International a nonprofit member-owned organization that since 1985 has provided organic certification services to organic farmers, processors and handlers from over 20 countries in North, Central and South America, Europe, Africa and Asia. OCIA's certification process facilitates access to numerous global organic markets including those in Japan, Central America, Europe and Canada.

OCIA also facilitates connections between farmers, researchers, consumers and decision makers, and educates organic producers and local and global communities regarding organic farming and foods. The goals of OCIA's research and education efforts include: promoting the image of organic products; identifying the needs of organic farmers and producers and facilitating the exchange on information; and supporting crop improvement and marketing efforts.

For more information, see the source of this passage: http://www.ocia.org

Funding will be awarded on a competitive basis to university scientists who have obtained matching funds from non-federal sources for specific research projects involving the processing, packaging, storage, and transportation of food products. The close cooperation between corporate and university researchers will assure that the latest scientific advances are applied to the most relevant problems and that any solutions will be efficiently transferred and used by the private sector.

For more information, see the source of this passage: http://mafma.unl.edu

# Nebraska Innovation Campus (NIC)

Nebraska Innovation Campus (NIC) is a research campus designed to facilitate new and in-depth partnerships between the University of Nebraska-Lincoln (UNL) and private sector businesses. NIC is located adjacent to UNL, strategically providing access to research faculty, facilities and students. NIC is operated by the Nebraska Innovation Campus Development Corporation (NICDC), a private 501(c) (3) corporation. At full build-out, NIC will be a 2 million square foot campus with uniquely designed buildings and amenities that encourage people to create and transform ideas into global innovation. NIC aspires to be the most sustainable research and technology campus in the U.S.

For more information about NIC visit: http://innovate.unl.edu/

## **Engler Agribusiness Entrepreneurship Program**

The Engler Agribusiness Entrepreneurship Program aims to support and encourage entrepreneurship amongst UNL students. This innovative program will facilitate entrepreneurship potential through student courses that lead to a minor, a lectureship series, entrepreneurship training camps, internship placement assistance, student travel and more. It will also help create a venture capital fund to support student startup businesses. Located in the Institute of Agriculture and Natural Resources, this program was created thanks to the support of the Paul F. and Virginia J. Engler Foundation.

For more information about the Engler Entrepreneurship Program visit: http://engler.unl.edu/

# LINCOLN'S LIFE SCIENCES AND AGRICULTURE INDUSTRY

Lincoln's life sciences, food processing, and agriculture industries include companies that develop and manufacture both human and animal products, conduct research and testing, produce instruments and controls, and provide specialized industry-related services. In total, Lincoln is home to dozens of life sciences, food processing, and agriculture industry firms. Most of these firms are listed below. Product descriptions and employment estimates are from the Nebraska Manufacturers' Directory.

#### Food Processors

## **Affinity Production Co.**

Snack foods manufacturing http://www.affinitysnacks.com Local employment: 50-99

#### **AGP Pet Foods**

Pet foods http://www.agp.com Local employment: 50-99

#### Archer Daniels Midland (ADM) Co.

Soybean products, specialty food ingredients, including soy meal and oil, animal feed http://www.admworld.com
Local employment: 100-249

### Archer Daniels Midland (ADM) Milling

Flour, pancake mix, corn meal http://www.admworld.com
Local employment: 100-249

#### Arck Foods, Inc.

Deli Hams http://www.cedarhollowfoods.com Local employment: 35-49

#### Coffee Roaster

Roasted coffees (packaged & bulk bags) Local employment: 1-4

#### Cook's Foods

Ham & pork products Local employment: 500-749

# Corn and More, Inc.

Popcorn, caramel corn, & other flavored popcorn products http://www.colbyridge.com Local employment: 5-9

## **Empyrean Ales Brewery**

Draft and bottled small batch specialty ales and lagers.

http://www.telesis-inc.com Local employment: 5-9

#### Fisco, Inc.

Meat processing plant construction, equipment fabrication & installation Local employment: 20-49

## Gooch Milling, Inc.

Grain milling

Local employment: 100-149

#### Gourmet Beef Products, Inc.

Beef jerky, frozen steaks Local employment: 1-4

## **Grain Bin Bread Company**

Bakery products

Local employment: 1-4

#### Grama's, Inc.

Jams, jellies, fruit butters & fruit syrups http://www.gramasjellies.com Local employment: 5-9

## **Heartland Gourment**

Frozen doughs & dry baking mixes including organic line www.heartlandgourmet.com
Local employment: 20-49

## **Hills Sunflower Seeds**

Roasted & salted sunflower seeds Local employment: 1-4

#### James Arthur Vineyards

Wine, processed & bottled http://www.jamesarthurvineyards.com Local employment: 5-9

#### Kamterter II, LLC

Proprietary product development of vegetable and flower crops; seed enhancement and coating systems; chemical dispersion systems http://www.kamterter.com Local employment: 10-19

### **Lincoln Snacks Company**

Snack foods including Poppycock, Screaming Yellow Zonkers and Fiddle Faddle & private label brands

Local employment: 100-249

## Marsland Laboratories, LLC

Nutrition for high performance dogs & dogs with Arthritis or Hip Dysplasia http://www.amaize.com

# Meyer Natural Foods

Meat products- natural angus beef http://www.meyernaturalangus.com

#### MI Industries, Inc.

Dietary & treat products for zoo animals & pets http://www.naturesvariety.com
Local employment: 50-99

#### NC+ Hybrids

Production, research and sales of pest and herbicide-resistant agricultural seeds http://www.nc-plus.com
Local employment: 20-49

#### Norland International

Design, mfr, and sales of plastic bottles, bottled water equip, and bottled water products including private label brands http://www.norlandintl.com Local employment: 20-49

#### Purina Mills, Inc.

Liquid cattle feed (hog & cattle concentrates) http://www.purina-mills.com Local employment: 50-74

#### R U Nuts Co.

Distributor of bulk & packaged nuts, candy, snack mixes & specialty coffees
Local employment: 10-19

#### Shuster's Meats

Meat & sausage products; pet foods Local employment: 5-9

## **Universal Cold Storage**

Cold storage & dry storage; packaging & labeling of meat products

#### US Foods, LLC

Contract manufacturer of ready-to-eat breakfast cereals; instant & quick-cooking food ingredient grains Local employment: 100-249

## **Valley Ice Company**

Ice (block & cubes)
Local employment: 10-19

#### **R&D** in Life Sciences & Agriculture

#### Benchmark Biolabs

Contract vaccine, biological, and intermediates development www.benchmarkbiolabs.com
Local employment: 50-74

## GeneSeek, Inc.

Contract animal DNA sequencing and genotyping www.geneseek.com
Local employment: 10-19

# Heinke Technology, Inc.

Plastic products for pharmaceutical and medical use

www.htiplastics.com Local employment: 100-199

#### **Holland Scientific**

Plant canopy sensor specifically designed to measure plant biomass under any illumination condition

http://www.hollandscientific.com

Local employment: 1-4

### Inverse Technology, Inc.

Neuromuscular and physical therapy equipment

www.protronics.com Local employment: 10-19

#### Li-Cor. Inc.

Proteomics, genomics, environment and agri- Local employment: 500-999 cultural instruments http://www.licor.com Local employment: 150-199

## LNKchemsolutions, Inc.

Nanoparticles for toxicology, encapsulation, and tissue engineering www.lnkchemsolutions.com Local employment: 1-4 employees

#### NanoBugs, Inc.

Microbiology/Virology animated teaching flashcards www.nanobugs.com Local employment: 1-4

#### Nature Technology, Inc.

DNA vector design and construction www.natx.com Local employment: 5-9

## Novartis Consumer Health, Inc.

Human OTC pharmaceuticals www.novartis.com Local employment

## Precision Machine Company, Inc.

Agricultural & animal research lab equipment http://www.pmcinc.biz Local employment: 10-19

## Stanley Senior Technologies, Inc.

Alarm and door monitoring systems for the health industry

www.seniortechnologies.com Local employment: 200-299

## Teledyne ISCO, Inc.

Environmental monitoring and chemical analysis instruments www.isco.com

Local employment: 200-499

#### Zoetis

Veterinary and animal health pharmaceuticals www.zoetis.com